



Attitudinal Factor Influencing Food Waste among Isabel Central School Students

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Abstract

Food waste in schools is a pressing global issue with economic, environmental, and social implications, yet little research has explored the attitudinal factors influencing this behavior among elementary students in the Philippines. This study examined the attitudes and behaviors of Grade 4 to Grade 6 students at Isabel Central School to identify determinants of food waste and propose actionable strategies to reduce it. Employing a quantitative descriptive-correlational design, data were collected via a validated Likert-scale questionnaire measuring students' taste preferences, food appearance, peer influence, food awareness, and meal satisfaction, alongside self-reported food waste behavior. Descriptive statistics summarized respondents' demographic characteristics and attitudinal tendencies, while Pearson's correlation coefficient was used to assess relationships between attitudes and food waste behavior. Results indicated that students generally exhibited neutral attitudes toward most food-related factors, with food appearance scoring highest in positive perception. Food waste behavior was significantly influenced by taste preference, meal satisfaction, and food presentation, whereas peer influence had a moderate effect, and food awareness showed a negligible association. These findings underscore the critical role of sensory and experiential factors over purely cognitive awareness in shaping students' food consumption decisions. The study highlights the need for student-centered, behaviorally informed interventions, such as improving meal palatability, incorporating appealing food presentation, and fostering positive peer modeling, to effectively reduce food waste in school feeding programs.

Keywords:

Food waste, Attitudinal factors, Elementary students, School feeding programs, Taste preference, Food consumption behavior, Philippines.

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INTRODUCTION

Food waste is a global issue with profound economic, environmental, social, and ethical implications. The paradox of edible food being discarded, particularly within institutional settings such as schools, raises critical concerns in light of persistent food insecurity and malnutrition. The United Nations Environment Programme (UNEP, 2021) estimates that approximately 931 million tons of food are wasted annually worldwide, undermining efforts toward sustainable consumption and global food security. Schools contribute significantly to this problem due to the large volume of meals served daily, making them an important focal point for food waste reduction initiatives.

In the Philippine context, school-based feeding programs play a vital role in addressing child undernutrition and improving educational outcomes. The Department of Education's School-Based Feeding Program (SBFP) aims to improve the nutritional status, attendance, and academic performance of wasted and severely wasted learners (Department of Education [DepEd], 2022). However, observable food waste within these programs reduces their effectiveness and results in the inefficient use of limited public resources. Despite the visibility of this issue, empirical research on food waste behavior in Philippine public elementary schools—particularly from an attitudinal perspective—remains limited.

Previous studies indicate that food waste in schools is often driven by behavioral and psychological factors rather than by food scarcity or availability. Factors such as taste preference, food appearance, peer influence, and meal satisfaction have been identified as critical determinants of whether students consume or discard school-provided food (Tolentino & Maghirang, 2021; Ishangulyyev et al., 2022). Although nutrition education and food awareness campaigns are commonly implemented in school settings, these initiatives do not consistently translate into reduced food waste, especially among younger learners who may struggle to convert knowledge into sustained behavior.

Attitudes toward food are shaped by a complex interaction of sensory experiences, cultural norms, family practices, peer dynamics, and school routines. Alshammari et al. (2021) emphasize that food-related attitudes encompass cognitive, emotional, and behavioral dimensions that directly influence consumption decisions. Understanding these attitudinal factors is therefore essential for designing effective and sustainable school-based interventions that go beyond information dissemination and address the lived experiences of students.

This study focuses on Isabel Central School in Leyte, where anecdotal observations suggest recurring food waste during school meals. Rather than attributing food waste solely to logistical shortcomings, this research examines the underlying attitudes, preferences, and social influences that shape students' food waste behavior. By generating localized, evidence-based insights, the study seeks to explore and understand the attitudinal factors influencing food waste behavior among students, identify the root causes of food waste, and propose actionable recommendations to minimize it. The study specifically aims to describe students' prevailing attitudes toward school-provided food, examine the attitudinal factors that contribute to food waste, analyze how these attitudes affect students' decisions to consume or discard food, and provide practical strategies to reduce waste based on the findings.

THEORETICAL / CONCEPTUAL FRAMEWORK

This study is anchored in Ajzen's Theory of Planned Behavior (TPB), which posits that behavior is primarily determined by attitudes toward the behavior, subjective norms, and perceived behavioral control (Ajzen, 1991). TPB provides a robust framework for examining food waste behavior in school settings, as it accounts for personal evaluations of food, social pressures from peers and authority figures, and perceived autonomy in food-related decision-making.

In the context of this study, students' food waste behavior is influenced by their attitudes toward school meals (e.g., taste preference and food appearance), subjective norms (e.g., peer influence during meals), and perceived behavioral control (e.g., the freedom to discard food without consequence). The conceptual framework operationalizes these constructs by identifying taste preference, food appearance, peer influence, food awareness, and meal satisfaction as independent variables influencing food waste behavior, which serves as the dependent variable.

Statement of the Problem

This study aimed to examine the attitudinal factors that influence food waste behavior among Grade 4 to Grade 6 students at Isabel Central School. Specifically, it sought to determine the prevailing attitudes of students toward school-provided food and to identify the particular attitudinal factors that contribute to food waste behavior. Furthermore, the study investigated whether a significant relationship exists between students' attitudes and their food waste behavior. Based on the findings, the study also aimed to propose practical strategies that may help reduce food waste within the school setting.

REVIEW OF RELATED LITERATURE AND STUDIES

Food Waste in School Settings

Food waste in schools is a pressing concern with multifaceted implications. Globally, a substantial portion of food waste occurs at the consumption stage, particularly in institutional food service systems such as schools (Filimonau et al., 2020). In developing countries, wasted food represents lost opportunities to address child hunger and malnutrition (FAO, 2020). School feeding programs, while designed to enhance child health and educational outcomes, may inadvertently contribute to food waste when meals do not align with students' preferences or expectations (Ishangulyyev et al., 2022).

Attitudinal and Sensory Determinants

A growing body of research emphasizes the role of sensory and attitudinal factors in shaping children's food consumption behavior. Taste preference and food appearance are consistently identified as strong predictors of whether students consume or discard school-provided meals (Ishangulyyev et al., 2022). Children are more likely to waste food perceived as unpalatable or visually unappealing, regardless of its nutritional value (Alshammari et al., 2021). These findings suggest that sensory satisfaction may have a more immediate influence on food-related decisions than cognitive awareness alone.

Social Influence and Behavioral Norms

Peer influence is another critical determinant of food waste in school environments. Children frequently observe and imitate the eating behaviors of their peers, establishing shared norms around food acceptance or rejection (Sharps et al., 2021). If food disposal is normalized within peer groups, individual students may feel less compelled to consume meals fully. This social modeling effect is particularly pronounced in elementary schools, where children are still developing independent decision-making skills (Alshammari et al., 2021).

Cultural and Environmental Factors

Cultural values and family upbringing shape students' attitudes toward food. In the Philippines, food is closely tied to tradition, family practices, and social interaction. Despite meals reflecting local dishes, some Filipino students continue to waste food due to preferences shaped by household exposure to processed or fast food (Tolentino & Maghirang, 2021). Conversely, students raised with an emphasis on food appreciation tend to waste less. The lack of student involvement in school meal planning also contributes to disinterest or rejection; participatory approaches such as soliciting feedback, involving students in gardening, or allowing menu choices have been shown to foster greater appreciation for food and reduce waste (Tolentino & Maghirang, 2021).

Environmental awareness has also been shown to influence food behavior. Wang, Zhang, and Liu (2023) found that students educated about food security, sustainability, and environmental responsibility demonstrated lower rates of food waste and greater appreciation for food as a resource. Integrating food literacy and sustainability education in schools may therefore support long-term behavioral change.

Psychological and Emotional Influences

Emotional and psychological factors further shape food consumption. Children may associate food with comfort, stress, or pleasure, and meals served in rushed, noisy, or uncomfortable environments are more likely to be wasted (Alshammari et al., 2021). Moreover, food presentation—including color, texture, portioning, and arrangement—affects consumption. Minor adjustments to meal presentation can significantly reduce plate waste, suggesting that behaviorally informed interventions need not be costly but should address sensory and contextual factors (Ishangulyyev et al., 2022).

Knowledge–Behavior Gap

While nutrition education and food awareness campaigns are common in schools, studies consistently identify a gap between knowledge and behavior (Wang et al., 2023). Young learners may understand that wasting food is undesirable, yet lack the motivation, self-regulation, or perceived control to consistently practice responsible consumption. This gap highlights the importance of behavioral and environmental strategies alongside knowledge-based interventions.

Synthesis

Collectively, these studies underscore that food waste in schools is deeply influenced by attitudinal, behavioral, social, cultural, and environmental factors, rather than solely logistical or nutritional shortcomings. Addressing these root causes through student-centered, behaviorally informed strategies is essential for reducing food waste in school settings. For Isabel Central School, exploring these dimensions can provide actionable insights to improve feeding programs, foster responsible consumption habits, and contribute to national nutrition goals and global sustainability agendas.

METHODOLOGY

Research Design

This study employed a quantitative descriptive-correlational research design to examine the association between attitudinal factors and food waste behavior among Grade 4 to Grade 6 students at Isabel Central School. The quantitative approach was appropriate because it allowed the researcher to measure the extent of food waste behavior and to statistically investigate the relationships between specific attitudinal variables—such as taste preferences, peer influence, food awareness, and food perception—and students' tendencies to discard school-provided meals. The descriptive component provided a detailed overview of students' prevailing attitudes toward school meals, while the correlational aspect evaluated the strength and direction of associations between attitudes and food waste behavior.

Participants and Sampling

Participants comprised students in Grades 4 through 6 at Isabel Central School, selected due to their cognitive ability to report accurately on dietary preferences and meal behaviors. Stratified random sampling was employed to ensure balanced representation across grade levels. Using Slovin's formula with a 5% margin of error, the total number of respondents was determined to achieve adequate statistical power. Inclusion criteria required students to be actively enrolled in Grades 4–6, to consistently participate in the school's nutrition program, and to have parental consent for participation. Students below Grade 4 or those not participating in school meals were excluded to maintain the validity of self-reported responses.

Research Instrument

Data were collected using a structured, three-part questionnaire. Part I captured demographic information, including age, gender, and grade level. Part II measured attitudes toward school-provided food across dimensions such as taste preference, food appearance, peer influence, food awareness, and meal satisfaction using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Part III assessed self-reported food waste behavior, including frequency and reasons for discarding food, also using a 5-point Likert scale.

To ensure content validity, the questionnaire was reviewed by a panel of experts in behavioral science, nutrition, and education. A pilot test with 10–15 students was conducted to refine items for clarity, cultural appropriateness, and age-level comprehension.

Data Collection Procedure

Permission to conduct the study was obtained from the school principal and the DepEd Division Office. Parental informed consent and student assent were secured prior to participation. Surveys were administered in-person during non-instructional periods, such as recess, to avoid disruption to academic activities. The researcher provided standardized instructions, explained study objectives, clarified terminology, and translated items into the local dialect when necessary. Each participant completed the questionnaire within 20–30 minutes.

Completed questionnaires were coded and organized for analysis, ensuring that participant anonymity was maintained. All data were stored securely in both physical and digital formats and were used exclusively for research purposes.

Data Analysis

Data were analyzed using both descriptive and inferential statistical techniques. Descriptive statistics—including mean, frequency, and percentage—were calculated to summarize demographic characteristics, prevailing attitudes, and patterns of food waste behavior.

The Pearson Product-Moment Correlation Coefficient was employed to determine the strength and direction of relationships between attitudinal variables and food waste behavior. Correlation coefficients were interpreted using the following scale: 0.00–0.19 (very weak), 0.20–0.39 (weak), 0.40–0.59 (moderate), 0.60–0.79 (strong), and 0.80–1.00 (very strong). Statistical significance was set at $\alpha = 0.05$. All analyses were conducted using IBM SPSS Statistics (Version 28) and Microsoft Excel for visualization purposes.

Ethical Considerations

The study adhered to ethical principles for research involving children. Informed consent from parents and assent from students were obtained. Participants' identities were anonymized through coding, and confidentiality was maintained throughout the research process. Data collection instruments and procedures were designed to be culturally sensitive and age-appropriate. Participants were informed of their right to withdraw from the study at any time without penalty, and the research environment promoted voluntary, honest, and comfortable participation. All procedures complied with institutional research ethics guidelines and Department of Education regulations.

RESULTS

Demographic Profile of Respondents. A total of 100 students participated in the survey. Table 1 presents the distribution of respondents according to grade level, gender, and age.

Table.1: Demographic Profile of the Respondents

| Demographic Variable | Category | Frequency | Percentage (%) |
|----------------------|-------------------|-----------|----------------|
| Grade Level | Grade 4 | 35 | 35% |
| | Grade 5 | 33 | 33% |
| | Grade 6 | 32 | 32% |
| Gender | Male | 48 | 48% |
| | Female | 52 | 52% |
| Age | 9 – 10 years old | 41 | 41% |
| | 11 – 12 years old | 59 | 59% |

Table 1 shows that the respondents are evenly distributed across age, gender, and grade levels, enhancing both the validity and generalizability of the study's findings. Grade 4 students comprised 35% ($n = 35$) of the sample, followed closely by Grade 5 students at 33% ($n = 33$) and Grade 6 students at 32% ($n = 32$), reflecting a balanced representation across the upper elementary grades. This equitable distribution allows for the collection of perspectives and behaviors regarding food waste across varying developmental stages.

The gender distribution was also relatively balanced, with 48% of the respondents being male ($n = 48$) and 52% female ($n = 52$), which supports the examination of potential gender-based differences in attitudes toward school-provided food and food waste behavior. In terms of age, 41% of participants ($n = 41$) were between 9 and 10 years old, while 59% ($n = 59$) were aged 11 to 12 years. This age range ensures that the study captures a spectrum of cognitive, emotional, and behavioral maturity levels relevant to food consumption decisions and attitudinal development.

Overall, the demographic profile indicates that the sample was representative and sufficiently diverse, strengthening the reliability of statistical analyses and providing a robust basis for assessing the influence of attitudinal factors on elementary students' food waste behaviors.

Attitudinal Factors Toward Food. This section presents the mean scores of respondents' attitudes toward the food served in school.

Table 2. Mean Scores of Attitudinal Factors Toward Food

| Attitudinal Factor | Mean | Interpretation |
|-------------------------------|------|----------------|
| Taste Preference | 3.21 | Neutral |
| Food Appearance | 3.45 | Agree |
| Peer Influence | 3.18 | Neutral |
| Food Awareness (Waste Impact) | 2.94 | Neutral |
| Satisfaction with Meals | 3.02 | Neutral |

Analysis of the results presented in Table 2 indicates that students generally exhibit a neutral attitude toward most food-related dimensions, including overall meal satisfaction ($M = 3.02$), peer influence ($M = 3.18$), food awareness or perceived impact of waste ($M = 2.94$), and taste preference ($M = 3.21$). These neutral scores suggest that students hold ambivalent views regarding the school-provided meals, reflecting neither strong approval nor disapproval. Notably, food appearance received the highest mean score ($M = 3.45$), corresponding to an “agree” interpretation, which indicates that the visual presentation of food positively shapes students’ perceptions and attitudes toward the meals.

This finding implies that aesthetic qualities of food, such as color, arrangement, and overall presentation, may encourage greater acceptance and consumption even when other attitudinal factors, such as taste or overall satisfaction, are neutral. Conversely, the relatively low score for food awareness suggests that students may not fully consider the environmental or ethical implications of discarding food. Taken together, these results underscore the importance of food presentation as a salient factor in influencing students’ dining behavior, highlighting the potential for visually appealing meals to enhance consumption and reduce food waste, even in the context of otherwise neutral attitudes.

Self-Reported Food Waste Behavior. Students were asked to rate how often they leave food uneaten, and why, using a similar Likert scale (1 = Never to 5 = Always).

Table 3. Frequency of Food Waste Behavior

| Behavior/Reason | Mean | Interpretation |
|--|------|----------------|
| I throw away food I don’t like | 3.56 | Often |
| I waste food if I’m not hungry | 3.42 | Sometimes |
| I copy my friends when they throw food | 3.10 | Sometime |
| I save leftovers for later | 2.81 | Sometime |
| I eat everything | 2.55 | Rarely |

Among the attitudinal indicators, the statement “I throw away food I don’t like” yielded the highest mean score, indicating that students’ food waste behavior is predominantly influenced by taste preferences. This finding suggests that children are more likely to discard school-provided meals when the flavors do not align with their expectations or personal liking. Taste represents an immediate, subjective sensory response that often takes precedence over considerations of nutritional value or the effort involved in meal preparation, particularly for children whose food choices are heavily guided by sensory enjoyment (Ishangulyyev et al., 2022; Alshammari et al., 2021).

In contrast, although to a lesser degree, peer influence and satiety-related factors also contributed to food waste behavior. In communal eating environments such as school canteens, social dynamics can subtly shape students' decisions about food consumption. For instance, children may mimic peers who reject certain foods or express negative opinions about specific dishes, even if these foods align with their own preferences (Sharps et al., 2021; Alshammari et al., 2021). Similarly, students reporting a lack of hunger at mealtimes may do so due to pre-meal snacking, irregular breakfast habits, or other irregular eating patterns, which can further exacerbate food wastage.

Collectively, these results underscore the importance of addressing not only sensory and gustatory factors but also social and behavioral influences in efforts to reduce school food waste. Strategies such as optimizing meal timing, incorporating student feedback into menu planning, and fostering positive peer modeling may enhance meal consumption while simultaneously mitigating food waste in school settings.

Relationship Between Attitudinal Factors and Food Waste Behavior. To test the main hypothesis, Pearson's correlation coefficient was used to determine whether there is a significant relationship between students' attitudes and their food waste behavior.

Table 4. Correlation Between Attitudinal Factors and Food Waste Behavior

| Attitudinal Factor | Correlation Coefficient (r) | Interpretation | Significance (p-value) |
|-------------------------|-----------------------------|----------------|-------------------------------------|
| Taste Preference | 0.52 | Moderate | 0.000 (<i>Significant</i>) |
| Food Appearance | 0.43 | Moderate | 0.001 (<i>Significant</i>) |
| Peer Influence | 0.38 | Weak | 0.007 (<i>Significant</i>) |
| Food Awareness | -0.12 | Very Weak | 0.216 (<i>Not Significant</i>) |
| Satisfaction with Meals | 0.47 | Moderate | 0.002 (<i>Significant</i>) |

The analysis revealed that food waste behavior is significantly positively correlated with taste preference, food presentation, and meal satisfaction, indicating that students' food consumption and disposal practices are strongly influenced by the sensory appeal of meals and their overall dining experience (Ishangulyyev et al., 2022; Alshammari et al., 2021). Specifically, children are more likely to consume food that they perceive as flavorful and visually appealing, and their level of satisfaction with school-provided meals further reinforces these behaviors. These findings underscore the critical role of sensory and experiential factors in shaping food-related behavior in school settings.

While peer influence also exhibited a positive relationship with food waste behavior, the association was not statistically significant, suggesting that social factors may exert a weaker impact compared with immediate sensory experiences. In contrast, food awareness demonstrated a very weak and non-significant negative correlation with food waste behavior, highlighting that mere knowledge of the environmental or ethical consequences of discarding food does not necessarily translate into responsible consumption. These results are consistent with prior research indicating that knowledge-based interventions alone are insufficient to reduce food waste among younger learners, and that behavior is more strongly guided by taste, presentation, and satisfaction (Wang et al., 2023; Tolentino & Maghirang, 2021).

DISCUSSION

The findings of this study reinforce the growing body of evidence that food waste behavior among elementary school students is driven more by attitudinal and experiential factors than by awareness alone. The significant relationships observed between taste preference, food appearance, meal satisfaction, and food waste behavior align with the findings of Ishangulyyev et al. (2022), who emphasized that sensory appeal plays a dominant role in children's food consumption decisions. These results suggest that when school meals fail to meet students' taste expectations or lack visual appeal, food waste becomes a likely outcome.

The modest yet significant influence of peer dynamics observed in this study is consistent with Alshammari et al. (2021), who noted that social modeling shapes eating behavior, particularly in group dining settings such as schools. When food disposal is normalized within peer groups, individual students may feel less compelled to consume their meals fully, regardless of nutritional value or awareness.

In contrast, the absence of a significant relationship between food awareness and food waste behavior highlights a critical knowledge-behavior gap. While students may possess basic understanding of the importance of avoiding food waste, this awareness does not necessarily translate into consistent behavioral change. This finding supports prior research suggesting that nutrition education alone is insufficient to reduce food waste without complementary behavioral and environmental interventions.

From a theoretical perspective, these results align with the Theory of Planned Behavior, which emphasizes that attitudes and subjective norms exert a stronger influence on behavior than knowledge alone. Practically, the findings suggest that school feeding programs should move beyond information dissemination and adopt student-centered strategies that enhance meal palatability, improve presentation, and positively shape social norms around food consumption.

At a broader level, the study contributes to national and global sustainability agendas, particularly Sustainable Development Goal 2 (Zero Hunger) and Sustainable Development Goal 12 (Responsible Consumption and Production). By addressing food waste at an early and formative stage of behavior development, schools can play a pivotal role in cultivating responsible consumption habits that extend beyond the classroom.

CONCLUSION

This study provides empirical evidence that attitudinal factors significantly influence food waste behavior among Grade 4 to Grade 6 students at Isabel Central School. Taste preferences, food appearance, peer influence, food awareness, and satisfaction with school-provided meals were identified as key determinants that shape whether students consume or discard their meals. The findings reinforce the notion that food waste in school settings is not solely a matter of logistics or resource availability but is deeply rooted in students' perceptions, social interactions, and behavioral habits.

The results also underscore the importance of adopting a student-centered and behaviorally informed approach to reducing food waste. Interventions that enhance meal palatability, improve food presentation, integrate peer and social modeling strategies, involve students in decision-making, and promote food literacy can collectively foster responsible consumption behaviors. Such strategies not only support the effectiveness of school-based feeding programs but also align with broader sustainability goals, including Zero Hunger (SDG 2) and Responsible Consumption and Production (SDG 12).

Ultimately, addressing food waste requires a holistic understanding of the attitudinal, cultural, and social dimensions that influence students' eating behavior. By providing localized, evidence-based insights, this study contributes to the development of practical, sustainable, and contextually relevant strategies to reduce food waste, enhance nutrition outcomes, and cultivate lifelong responsible consumption habits among young learners.

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