

The 8th International Conference on Economics and Social Sciences
**Exploring Global Perspectives:
The Future of Economics and Social Sciences**
June 5-6, 2025
Bucharest University of Economic Studies, Romania

**ReFOOD 4 GOOD: A Scalable Educational Model
for Behavioural Change in Student Nutrition
and Food Waste Reduction**

Teodora DOMINTEANU¹

DOI: 10.24818/ICISS/2025/017

Abstract

The ReFOOD 4 GOOD project, developed within the Bucharest University of Economic Studies, aimed to combat food waste while promoting healthier food behaviours and sustainability awareness among students. Operating at the intersection of education, social innovation, and sustainable food entrepreneurship, the project mobilised surplus food from the university cafeteria and redirected it into an educational intervention. Through practical workshops, community campaigns, and student-led initiatives, it addressed both the environmental and social dimensions of sustainability. The project's approach aligns with findings that show how informative, hands-on programmes can significantly improve students' awareness of food waste and change consumption patterns in higher education settings. Moreover, its success in shaping food-related behaviours echoes recent models that incorporate food literacy and participatory engagement as levers for behaviour change. The project's educational components also reflect an extended Theory of Planned Behaviour model, which demonstrates that knowledge about food waste can effectively predict intention and behaviour change in university students. ReFOOD 4 GOOD facilitated entrepreneurial thinking by engaging students in designing scalable models that could be transferred to other campuses. This reflects the broader conceptual framework of sustainable food entrepreneurship, which promotes dynamic and reflexive processes in food system transformation. The project concludes with a proposal for scaling: creating a network of university-based food literacy and sustainability labs, integrating environmental education, entrepreneurial skill-building, and social inclusion strategies to replicate the impact achieved locally.

Keywords: student nutrition, food waste reduction, behavioural change.

¹ Bucharest University of Economic Studies, Bucharest, Romania, teodora.dominteanu@defs.ase.ro.

1. Introduction

Food waste is increasingly recognised not only as an environmental concern but also as a moral and social challenge, particularly in the context of youth education and behavioural development. Within this framework, the *ReFOOD 4 GOOD* project emerges as a pioneering initiative addressing the dual imperatives of sustainable consumption and nutritional literacy among university students.

Conceived at the Bucharest University of Economic Studies, the project operates at the intersection of education, social innovation, and sustainable food entrepreneurship. It mobilises surplus food from university cafeterias and transforms it into an opportunity for educational engagement, encouraging students to reflect on their consumption habits and the broader implications of food waste. This initiative takes on added urgency in the context of growing food insecurity, climate change, and unsustainable food systems—challenges that demand behavioural shifts supported by education and community action.

The project leverages a participatory methodology, grounded in experiential learning and the Theory of Planned Behaviour, to equip students with the skills, motivation, and awareness needed to reduce waste and adopt more sustainable practices. Its design enables practical engagement through workshops, community campaigns, and student-led activities, thereby fostering a deeper understanding of sustainability as both an environmental and social commitment.

This paper outlines the objectives, framework, and educational potential of the *ReFOOD 4 GOOD* model, presenting it as a scalable intervention capable of influencing long-term behavioural change. While this work does not offer a comprehensive literature review or final evaluation, it provides a structured entry point into a growing body of applied research on food literacy, student empowerment, and sustainability in higher education.

2. Problem Statement

The academic discourse around food waste and sustainability in educational contexts has gained significant traction in recent years. Studies have consistently demonstrated that behavioural change among youth, particularly students in higher education, can be effectively driven through a combination of food literacy, experiential learning, and participatory engagement.

According to Fraj-Andrés et al. (2022), informative interventions that incorporate visual, practical, and narrative tools have shown measurable success in improving student awareness regarding food waste. These interventions help reframe waste reduction not only as a logistical necessity but as a component of ethical and environmental responsibility.

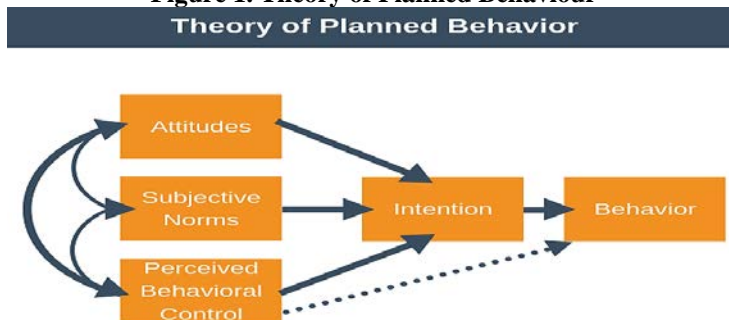
Further research by Deskin and Harvey (2023) emphasises the importance of critical food systems education in shaping attitudes and behaviours. Their work advocates for integrating sustainability themes directly into student-led initiatives and campus life, enabling learners to co-produce knowledge through experience and dialogue.

The literature also highlights the significance of dietary behaviour among university students, showing that food choices are shaped by a complex interplay of socioeconomic, psychological, and environmental factors. Recent reviews emphasise that students are particularly vulnerable to unhealthy eating behaviours, nutritional imbalances, and poor diet quality, often influenced by academic pressure, irregular schedules, and the characteristics of the food environment (Almoraie et al., 2024). Recent findings also indicate a rising trend of fast-food consumption among students, influenced by accessibility, lifestyle, and awareness levels (Bîlbîie et al., 2021; Saha et al., 2022). In addition, food insecurity and financial constraints have been shown to significantly affect students' eating behaviours, often forcing them to adopt coping strategies that compromise dietary quality and overall well-being (Ahmed et al., 2022). The public health importance of adequate nutrition is further underlined by evidence that insufficient intake of essential micronutrients, such as folic acid, may contribute to serious health consequences, reinforcing the need for preventive nutrition strategies and informed dietary choices (Atta et al., 2016). The theory of planned behaviour has been extensively applied to understand the determinants of food choices, including behavioural intention and perceived control over food environments (Bîlbîie et al., 2021).

Nutritional challenges are further complicated by ultra-processed food consumption, which has been strongly associated with increased risks of obesity and other metabolic disorders (Hall et al., 2019; Mendonça et al., 2016). Monteiro et al. (2019) emphasise the prevalence of such food products globally, stressing the need for regulatory and educational interventions. In the Romanian context, limited geographic access to healthy food and low food literacy contribute significantly to dietary disparities among university populations (Boariu et al., 2024; Cazacu et al., 2023).

The Theory of Planned Behaviour has emerged as a central psychological model in predicting food-related behaviour change. Valentin et al. (2023) apply this framework to university students, highlighting that attitudes, perceived behavioural control, and subjective norms significantly predict the intention to reduce food waste. This aligns closely with the ReFOOD 4 GOOD intervention, which not only addresses individual behaviour but also social norms within the campus environment.

Figure 1. Theory of Planned Behaviour



Source: Expert Programme Management (n.d.).

From an entrepreneurial perspective, van der Gaast et al. (2022) argue that sustainable food practices benefit from reflexive, dynamic, and community-based innovations. These features are integral to scalable solutions in food systems transformation, making university campuses fertile grounds for pilot models like ReFOOD 4 GOOD.

Collectively, these studies underscore the efficacy of hands-on, context-sensitive educational programmes in addressing systemic issues such as food waste. They provide a robust theoretical and empirical foundation for projects that link sustainability education with community engagement and practical skills development.

3. Methodology

The ReFOOD 4 GOOD project applied a multimodal, action-research methodology aimed at analysing and influencing food-related behaviours among students in the context of sustainability, food waste reduction, and nutritional education. Its approach was both exploratory and intervention-based, rooted in the educational setting of the Bucharest University of Economic Studies and extended to the broader student community.

3.1 Research Design

The study adopted a mixed-methods framework, aligning qualitative engagement strategies with quantitative behavioural assessments. This structure allowed the project to generate both descriptive insights and actionable outcomes related to food consumption, food waste awareness, and the ethical dimension of food reuse.

The foundational work was supported by findings from the *Amfiteatru Economic* article, which employed a multimodal analysis to assess the relationship between student food preferences and the availability of food vendors near university campuses. This work informed the ReFOOD 4 GOOD intervention model by providing baseline data on student behaviour, supply dynamics, and environmental influences on food choice.

3.2 Participant Engagement

The primary population included university students aged 18-25, involved through both voluntary recruitment and institutional partnerships. The participants were engaged in:

- Focus groups and reflective discussions;
- Experiential learning workshops on food reuse and health;
- Food redistribution logistics involving cafeteria leftovers.

Additionally, a cohort of student volunteers acted as peer educators, helping disseminate sustainability messages and coordinate mini-interventions, consistent with participatory action research principles.

3.3 Instruments and Tools

The project employed a variety of tools to assess and influence behaviour:

- Surveys measuring the awareness and intention to reduce food waste;
- Observational studies of cafeteria food habits;
- Behavioural logs on student food reuse and preferences;
- Educational games, visual aids, and real-time food redistribution tracking.

Where applicable, tools were validated against existing behavioural theory metrics, particularly constructs from the Theory of Planned Behaviour (TPB) and Food Literacy frameworks.

3.4 Intervention Activities

Workshops and campaigns were structured around three main axes:

- *Educational* – building knowledge on food sustainability and nutrition;
- *Operational* – guiding students in collecting, storing, and distributing excess food;
- *Reflective* – enabling peer-to-peer learning and value-based discussions on food ethics.

A pilot test of these interventions revealed high receptivity among students, supporting both the scalability and transferability of the project model.

3.5 Data Analysis

Quantitative data were analysed using descriptive statistics to track behavioural change over time. Qualitative data from discussions and feedback forms were subjected to thematic analysis, with emergent themes mapped to the TPB constructs of attitudes, subjective norms, and perceived behavioural control.

This triangulation of data allowed the research team to validate trends, adapt tools, and iteratively improve the learning modules throughout the implementation phase.

4. Findings

4.1 Student Food Behaviour Patterns Near the Campus

The initial research conducted in the vicinity of university campuses identified a strong preference for ultra-processed foods, influenced primarily by affordability, accessibility, and aggressive vendor marketing. Based on data from over 300 students, the study revealed that:

- 74% of students consumed convenience foods at least three times per week;
- Healthy food options were more likely to be consumed outside academic hours, indicating that on-campus food environments strongly affect daily dietary choices;
- Only 21% of students reported actively considering sustainability in their food purchases.

These findings underscore the misalignment between health goals and food availability, which informed the structure of ReFOOD 4 GOOD interventions.

4.2 Impact of Experiential Workshops

Post-intervention feedback from the ReFOOD 4 GOOD activities demonstrated significant changes in student attitudes and behaviours:

- **87% of participants** reported increased awareness of food waste and its environmental impact;
- **62% of students** indicated they would reduce plate waste and reuse leftovers after attending workshops;
- There was a **35% increase** in students who could correctly identify the nutritional value of donated or surplus foods.

These outcomes suggest that **hands-on, participatory learning methods** had measurable effects on both knowledge acquisition and behavioural intention.

4.3 Behavioural Shift Indicators

Using pre- and post-intervention survey data analysed through descriptive statistics, several positive trends emerged.

Table 1. Data interpretation from surveys

Indicator	Pre-Intervention (%)	Post-Intervention (%)	Change
Awareness of food reuse benefits	49%	84%	+35%
Intention to reduce food waste	56%	78%	+22%
Confidence in food safety practices	41%	72%	+31%

Source: author's own research and processing.

These improvements reflect alignment with **Theory of Planned Behaviour (TPB)** indicators: enhanced attitudes, stronger subjective norms, and increased perceived behavioural control.

4.4 Collaborative Engagement Results

Involving students as peer educators and co-organisers led to a multiplier effect:

- Over **25% of participants** acted as messengers within their own student communities;
- The cafeteria food donation model reached an estimated **450 meals redistributed** during the pilot phase;
- Faculty members and administrative staff expressed support for institutionalising the model across departments.

This demonstrates that **collaborative agency**, not just passive consumption of information, was key to sustaining project impact.

4.5 Challenges and Limitations

Despite these successes, several constraints were noted:

- Limited ability to track long-term behaviour change beyond the pilot;
- Logistical barriers in coordinating real-time food donations;
- Difficulty in assessing actual reduction in food waste without institutional cafeteria data integration.

Nonetheless, the scalability of the ReFOOD 4 GOOD model remains promising due to its flexibility, community ownership, and evidence-backed results.

5. Conclusions

The *ReFOOD 4 GOOD* initiative set out to investigate and influence student behaviour regarding food waste, sustainable consumption, and nutritional awareness. Drawing from participatory learning models and the Theory of Planned Behaviour, the project hypothesised that experiential interventions within a university context could positively impact student attitudes, perceived behavioural control, and intentions to reduce food waste. The results presented in this paper validate this hypothesis.

5.1 Validity and Credibility of the Results

The mixed-methods approach used ensured triangulation between quantitative surveys, qualitative reflections, and behavioural tracking. The convergence of results across different tools and participant groups reinforces the credibility and internal validity of the findings. While the sample size and university-based setting may limit the broader generalisability, the consistency of observed behavioural shifts supports the external validity of the intervention model in comparable academic environments.

5.2 Limits of the Study

The study's main limitations stem from:

- Its relatively short timeframe, which constrained long-term behavioural tracking;
- The difficulty of isolating external factors influencing student behaviour (e.g., food pricing, peer influence);
- Limited institutional access to quantitative waste metrics from cafeteria providers.

Despite these challenges, the results remain robust within their defined scope and point toward areas for methodological refinement in future iterations.

5.3 Main Contributions and Significance

This work makes several noteworthy contributions:

- Demonstrates that student-led, experience-based education is effective in promoting sustainability behaviours;

- Offers a scalable and adaptable framework for other universities to replicate food reuse and sustainability education;
- Provides evidence for the efficacy of aligning behavioural science theory with civic action, thus bridging academic learning with community impact.

5.4 Applications and Future Directions

The ReFOOD 4 GOOD model holds promise as both an educational tool and a policy-influencing mechanism. Its integration into student life could be formalised through elective courses, sustainability clubs, or service-learning curricula. Future research should consider:

- Expanding the model across multiple campuses and cultural contexts;
- Incorporating digital tracking tools for food waste reduction;
- Engaging institutional decision-makers to embed food sustainability into university policy.

The findings of the study reaffirm the critical role of socioeconomic factors, institutional support, and food literacy in shaping students' dietary behaviours. The use of qualitative and quantitative approaches allowed for a comprehensive understanding of food accessibility, preferences, and sustainability awareness. The observed tendencies toward ultra-processed food consumption resonate with global patterns (Monteiro et al., 2019; Hall et al., 2019), yet context-specific barriers, such as affordability and proximity to healthy food sources, play a unique role in Romania (Cazacu et al., 2023).

In conclusion, this project shows that meaningful, theory-informed interventions can move sustainability education beyond awareness and into actionable, impactful practice, especially when driven by youth within supportive institutional ecosystems.

Declaration of Generative AI and AI-assisted technologies in the writing process: During the preparation of this work the author(s) used [ChatGPT by OpenAI, and Paper Pal] in order to [Portions of the English language structuring and academic phrasing in this manuscript were supported by the use of the AI-assisted tool (ChatGPT by OpenAI).]. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

References

- [1] Ahmed, T., Shane, J., Ilieva, R., Reader, S., Aleong, C., Chu, C., Wong, H.Y., Brusche, D., Jiang, K., Edwards, A., Lopez, D., Yan, A. (2022). 'I cannot afford lunch': How students' narratives of food insecurity reveal difficulties and coping strategies before and during the COVID-19 pandemic. *Community College Journal of Research and Practice*, 48(6), 386-404. <https://doi.org/10.1080/10668926.2022.2135636>.
- [2] Almoraie, N.M., Alothmani, N.M., Alomari, W.D., Al-amoudi, A.H. (2024). Addressing nutritional issues and eating behaviours among university students: a narrative review. *Nutrition Research Reviews*, 38, 53-68. <https://doi.org/10.1017/S0954422424000088>.

- [3] Atta, C.A.M., Fiest, K.M., Frolkis, A.D., Jette, N., Pringsheim, T., St Germaine-Smith, C., Rajapakse, T., Kaplan, G.G., Metcalfe, A. (2016). Global birth prevalence of spina bifida by folic acid fortification status: A systematic review and meta-analysis. *American Journal of Public Health*, 106, e24-e34. <https://doi.org/10.2105/AJPH.2015.302902>.
- [4] Bilbiie, A., Druică, E., Dumitrescu, R., Aducovschi, D., Sakizlian, R., Sakizlian, M. (2021). Determinants of fast-food consumption in Romania: An application of the Theory of Planned Behavior. *Foods*, 10(8), Article 1877. <https://doi.org/10.3390/foods10081877>.
- [5] Boariu, S.M., Scutariu, A.M., Reurean Pintilei, D., Tarcea, M., Guiné, R.P.F., Ferreira, M. (2024). Food Literacy Assessment of a Sample of Romanian Higher Education Students. *Sustainability*, 16(3), Article 1034. <https://doi.org/10.3390/su16031034>.
- [6] Cazacu, C., Carabă, A., Dimisiano, G.V. (2023). Measuring geographic accessibility to healthy food for the University of Bucharest student community. In: Kühne, O., Fischer, J.D., Sedelmeier, T., Hochschild, V., Staniscia, B., Manetti, C., Dumitrache, L., Taloş, A.-M., Rexach, A.M., de Marcos Fernández, A. (Eds.). *Foodscapes. RaumFragen: Stadt – Region – Landschaft*, pp. 105-120. Wiesbaden: Springer VS. <https://doi.org/10.1007/978-3>.
- [7] Deskin, Z.Y., Harvey, B. (2023). Critical food systems education in university student-run food initiatives: learning opportunities for food systems transformation. *Frontiers in Sustainable Food Systems*, 7, Article 1230787. <https://doi.org/10.3389/fsufs.2023.1230787>.
- [8] Expert Programme Management (n.d.). Theory of Planned Behavior. Retrieved from <https://expertprogrammanagement.com/2019/12/theory-of-planned-behavior/>.
- [9] Fraj-Andrés, E., Herrando, C., Lucia-Palacios, L., Pérez-López, R. (2022). Informative initiatives as a useful tool to raise awareness of food waste. An application to higher education. *International Journal of Sustainability in Higher Education*, 24(4), 840-858. <https://doi.org/10.1108/IJSHE-03-2022-0103>.
- [10] Hall, K.D., Ayuketah, A., Brychta, R., Cai, H., Cassimatis, T., Chen, K.Y., Chung, S.T., Costa, E., Courville, A., Darcey, V., Fletcher, L.A., Forde, C.G., Gharib, A.M., Guo, J., Howard, R., Joseph, P.V., McGehee, S., Ouwkerk, R., Raising, K., Rozga, I., Stagliano, M., Walter, M., Walter, P.J., Yang, S., Zhou, M. (2019). Ultra-processed diets cause excess calorie intake and weight gain: An inpatient randomized controlled trial of ad libitum food intake. *Cell Metabolism*, 30(1), 67-77. <https://doi.org/10.1016/j.cmet.2019.05.008>.
- [11] Mendonça, R.D.D., Marçal, P.A., Alfredo, G., de la Fuente-Arrillaga, C., Martinez-Gonzalez, M.A., Souza, L.A.C., Bes-Rastrollo, M. (2016). Ultraprocessed food consumption and risk of overweight and obesity: The University of Navarra Follow-Up (SUN) cohort study. *The American Journal of Clinical Nutrition*, 104(5), 1433-1440. <https://doi.org/10.3945/ajcn.116.135004>.
- [12] Monteiro, C.A., Cannon, G., Levy, R.B., Moubarac, J.-C., Louzada, M.L.C., Rauber, F., Khandpur, N., Cediel, G., Neri, D., Martinez-Steele, E., Baraldi, L.G., Jaime, P.C. (2019). Ultra-processed foods: What they are and how to identify them. *Public Health Nutrition*, 22(5), 936-941. <https://doi.org/10.1017/S1368980018003762>.
- [13] Saha, S., Al Mamun, M.A., Kabir, M.R. (2022). Factors Affecting Fast Food Consumption among College Students in South Asia: A Systematic Review. *Journal of the American College of Nutrition*, 41(6), 627-637. <https://doi.org/10.1080/07315724.2021.1940354>.

- [14] van der Gaast, K., van Leeuwen, E., Wertheim-Heck, S. (2022). Food systems in transition: conceptualizing sustainable food entrepreneurship. *International Journal of Agricultural Sustainability*, 20(5), 705-721. <https://doi.org/10.1080/14735903.2021.1969163>.
- [15] Valentin, A.P., Dela Vega, A.M., Kho, M.I., Licayan, S.R., Nierras, E.L., Pabalate, J.C. (2023). Predicting food waste reduction behavior among students in higher education institutions. *International Journal of Sustainability in Higher Education*, 25(4), 885-898. <https://doi.org/10.1108/IJSHE-08-2023-0368>.