Transforming Pixels into Plates: Harnessing Game Strategies for Sustainable Food Practices.

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EXTENDED ABSTRACT

The purpose of this study is to explore how game strategies are used in digital games to promote sustainable food habits. This study is part of the Horizon FOODMISSION research project, which aims to advance citizen-driven, gamification-supported approaches for transforming food consumption patterns toward healthy and sustainable practices. With growing evidence supporting the efficacy of gamification and serious games in fostering engagement, motivation, and awareness (e.g., Azevedo et al., 2018; Fatima et al., 2023; Bohm et al., 2021), this research seeks to delve into the gaming industry's approach to sustainability, particularly in the context of food systems.

Recent systematic literature reviews have explored the current academic discourse on using gamification strategies and serious games to encourage behavior changes related to sustainable practices (Authors, In Prep; Chow et al., 2019; Suleiman-Martos et al., 2021; Lim et al., 2024; Mabalay, 2025). These reviews highlight that a universal approach is often ineffective in achieving desired outcomes (Nasirzadeh, 2024). Instead, the effectiveness of the use of digital games to promote sustainable behaviors appears to depend significantly on the specific characteristics of the target audience and the primary objectives of the strategy employed. For instance, scaffolding strategies, such as structured challenges and quests, have been shown to motivate individuals who are initially hesitant to overcome barriers to behavioral change (Jones et al., 2014; Mitis et al., 2019). On the other hand, tracking strategies can increase environmental responsibility, resulting in a higher sense of self-efficacy among users, as seen in a gamified platform for environmental conservation (Du et al., 2019). Additionally, cooperative strategies can increase motivation to engage in sustainable behavior, as seen in a digital simulation game for sustainable development discussed by Ivens et al. (2020). These findings highlight the importance of tailoring digital game strategies to the specific needs and preferences of targeted

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audiences, rather than relying on a one-size-fits-all approach. It is therefore relevant to have an understanding of the different ways in which digital games can be used to foster sustainable food behaviors.

A recent literature review on existing academic literature on the use of digital games to foster sustainable and healthy food behaviors (Authors, In Prep) has concluded, however, that existing studies that focus on the analysis of food-related games Camera-readyare primarily focused on nutrition literacy or dietary behavior change, rather than sustainable food habits (Luhanga et al., 2016; Barwood et al., 2020; Azizi-Soleiman et al., 2023; Okpanachi & Adaji, 2024). This gap highlights the need for research specifically targeting the analysis of games on food sustainability. This study aims to address this gap by providing an answer to the following research question research question is: How do digital games use game design strategies to encourage sustainable food practices?

In this study, we employ a qualitative methodological approach focused on the analysis of digital games with a focus on food sustainability. This study is currently in progress, and therefore, we cannot provide the final number of games analyzed, but the goal is to analyze at least 40 games.

The sampling strategy employed for this study was comprehensive sampling (Gray, 2004), meaning we examined each and every case we could find that matched the sampling criteria. The criteria include: (1) games must address sustainable food practices; (2) considering the language proficiency of the researchers involved, titles should be in English, Spanish, Portuguese, German, or Dutch, or use no written or spoken language; (3) they must be definable as games; and (4) be at least partially digital. Games focused on quizzes and non-digital formats are excluded. Due to the absence of existing databases, to identify games that meet our sampling criteria, we are conducting a systematic online search using sustainability-related terminology in our search strings in Google, App Stores, and game platforms such as Steam. Initial searches employed broad terms such as "sustainability game" or "video games on sustainability". We refined our search terms and concentrated on app stores, game stores, gaming platforms, and platforms dedicated to sustainability or health games.

to The data collection method used was the “utilitarian” analytical play approach as described by Mäyrä (2008). Analytical play in academic studies is a utilitarian form of play that involves connecting games to broader historical, conceptual, and social contexts within game studies. It requires engaging with new genres and understanding the language and thought processes of player communities. This type of play contributes to a comprehensive understanding of studied phenomena, essential for developing informed research questions (Mäyrä, 2008).

For the game analysis, we conducted thematic game analysis following the steps proposed by Clara Fernández-Vara (2024). This approach allowed us to examine the various game strategies used within the games and analyze their relation to different aspects of sustainability represented in the game content. By doing so, we identified what strategies are used for specific facets of sustainability and how these strategies are implemented.

As this study is ongoing, it is not yet possible to discuss final results. However, the preliminary results….outcomes will provide insight into how digital games approach the communication of food sustainability-related themes. By examining the game

design strategies used in digital games to encourage sustainable food behaviors, this research provides insights into developing methods for promoting more sustainable habits through gaming. The findings from this study are anticipated to inform future endeavors in creating digital games that incorporate sustainability themes, potentially supporting broader educational and environmental objectives.

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