

DEVELOPING ECOSYSTEM AND ECOLOGICAL FOOTPRINT AWARENESS THROUGH REAL-LIFE SCENARIO-BASED LEARNING

ABSTRACT

This study aims to assess the ecosystem and ecological footprint awareness of high school students aged 15–17, examine grade-level differences, and evaluate the impact of real-life scenario-based learning. Conducted at İzmir Private Mavişehir Sınav Anatolian High School, the study involved 35 randomly selected students from 9th, 10th, and 11th grades. Data were collected using the Ecological Footprint Awareness Scale (Coşkun & Sarıkaya, 2014) and scenario-based assessment tools. Findings show students' awareness is above average, with no significant grade-level differences, but real-life scenarios contributed to increased awareness.

Keywords: Ecosystem, Ecological Footprint, High School Students, Environmental Conservation

INTRODUCTION

Globalization, as an ongoing process, offers new opportunities to humanity while also giving rise to new challenges, primarily environmental issues. As a natural consequence of these problems, the disruption of ecological balance threatens the survival of humans and other living beings. The reckless exploitation of nature, excessive consumption, and disruption of its internal dynamics have led to significant environmental degradation (Kaypak, 2013, p. 18). A study conducted by Zengin and Esedov (2010, p. 149) highlights that the unsustainable consumption of natural resources contributes to severe environmental problems, with human activities being the primary cause of these issues today.

According to Çabuk (2019, p. 12), unconscious human behavior is the primary cause of negative changes in the environment. Although individuals may initially seem to impact only their immediate surroundings through their harmful actions, these effects eventually extend to the entire planet. Environmental damage caused by humans can result from either a lack of awareness or insufficient knowledge.

Considering the concept of sustainability, which emphasizes meeting human needs while ensuring that future generations can also meet theirs, the ecological footprint can be regarded as a key indicator of sustainability (Günel, Yücel Işıldar & Atik, 2018; Tıraş, 2012).

For the sustainability of life, individuals' living conditions and economic activities must be regulated in accordance with the planet's carrying capacity. Increasing awareness of the ecological footprint is possible through environmental education (Pekel, Kaya & Demir, 2007, p. 169). Gökçek, Bozdağ, and Demirbağ (2019, p. 721) state that while the importance of environmental education has increased, studies examining the effectiveness of curriculum content in reducing the ecological footprint remain limited. In this context, this study aims to determine high school students' awareness levels of ecosystems and ecological footprints and assess the effectiveness of the real-life scenario-based learning method in enhancing their awareness.

Research Questions:

1. What is the level of students' ecological footprint awareness?
2. Does ecological footprint awareness vary by grade level?
3. Does the real-life scenario-based learning method enhance students' awareness levels?

METHOD

This study used the survey model, a quantitative research method. The sample included 35 randomly selected students from 9th, 10th, and 11th grades. The Ecological Footprint Awareness Scale (Coşkun & Sarıkaya, 2014) consists of 40 items across five sub-dimensions.

To enhance environmental awareness, real-life scenarios were developed on food, transportation, housing, energy, waste, and water. Each scenario was assessed using a five-question, five-point Likert scale.

FINDINGS AND DISCUSSION

This study examined high school students' ecological footprint awareness levels and evaluated the impact of real-life scenario-based learning on their awareness.

Ecological Footprint Awareness Scale Results

Students' ecological footprint awareness levels were found to be above average. The overall mean score on the scale was calculated as 3.56.

Table 1. Ecological Footprint Scale Class Level and Overall Values Table

Class Level	Food Sub-Dimension	Transportation and Housing Sub-Dimension	Energy Sub-Dimension	Waste Sub-Dimension	Water Consumption Sub-Dimension	Ecological Footprint Value
9	3,30	3,22	3,48	3,50	3,64	3,43
10	3,15	3,22	4,11	3,58	4,02	3,61
11	3,05	3,31	3,91	3,64	4,25	3,63
Average Value	3,17	3,25	3,84	3,57	3,97	3,56

Overall findings show high awareness in water (3.97) and energy (3.84) conservation, followed by waste management (3.57) and transportation/housing (3.25), while food awareness remains lowest (3.17). Although no major differences were found across grade levels, 10th graders showed higher awareness in energy and water, and 11th graders in water consumption.

Real-Life Scenario-Based Learning and Results

Real-life scenario-based learning enables students to grasp abstract concepts through concrete examples. In this study, six scenarios were designed to assess and enhance awareness of ecosystems and ecological footprints, focusing on food, transportation, housing, energy, waste, and water. After implementation, students' awareness levels were evaluated.

Food Scenario: A scenario was presented in which a student contributes to food waste by taking more food than necessary at an open buffet breakfast. Only 43.2% of the students found this behavior inappropriate, while 32.4% believed that waste is inevitable. Low awareness of food waste was observed.

Transportation Scenario: A case was examined where a taxi driver exceeded speed limits, causing environmental harm, and posing a traffic safety risk. 78.3% of the students stated that exceeding speed limits has negative consequences for both the environment and safety.

Housing Scenario: A newly married couple's decision to choose a large and extravagant home was discussed. 56.7% of the students viewed large houses as environmentally harmful, while 35.1% considered them a matter of personal preference.

Energy Scenario: A scenario explored how a parent addresses a child's lack of electricity conservation. 81% of the students demonstrated awareness of energy conservation.

Waste Scenario: The process of an environmentally unaware student developing ecological awareness regarding recycling was presented. 83.7% of the students recognized the importance of recycling.

Water Consumption Scenario: Measures to prevent water waste in daily life were discussed. 83.7% of the students demonstrated a high level of awareness regarding water conservation. These findings are consistent with the scale results, supporting the impact of real-life scenario-based learning on awareness levels.

RECOMMENDATIONS

Enhancing ecological footprint awareness is essential for ensuring that both individuals and future generations can live in a healthy environment. In this context, raising awareness among young people is particularly important. Given the impact of education on individuals' attitudes and behaviours, it is recommended to use a combination of traditional and innovative teaching methods to improve awareness of ecosystems and ecological footprints.

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