

# Project-Based Recycling Education: A Practical Approach to Environmental Education

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*“The more clearly we focus our attention on the wonders and realities of the universe  
about us, the less taste we shall have for destruction”*

*- Rachel Carson*

**A**MID GROWING resource constraints and intensifying environmental pollution worldwide, environmental education has acted as a crucial vehicle for fostering ecological and environmental awareness in younger generations. The initial goals of environmental education were to foster global public knowledge about environmental issues and increase individuals' motivation and skills to protect or improve the natural environment (van de Wetering et al., 2022). With the changes in the global environmental agenda and societal development, environmental education has become increasingly focused on education for sustainable development, which emphasizes the cultivation of systemic thinking, interdisciplinary inquiry, and practical competences and covers a diverse range of topics including climate change, the circular economy, green technology, civic engagement, and more.

Recycling education, mainly addressing resource reuse and waste reduction, is regarded as a key component of environmental education, serving as an important avenue for translating environmental awareness into eco-friendly actions in everyday life, with an emphasis on “practicing environmental protection in your immediate environment.” Through learning about waste sorting, resource reuse, and recycling, students perceive the social significance of environmental-friendly behaviors in real-world contexts, thereby progressively developing stable senses of environmental responsibility.

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There are two notable approaches to school-based recycling education in the literature. One is to integrate the concept of recycling into subject-based teaching. For instance, Turkish researchers incorporated the core ideas of recycling into the “matter cycle” instruction in the senior secondary biology curriculum by designing a 10-session recycling education program based on experimental activities such as “organic decomposition experiments.” The program proved effective in increasing students’ conceptual understanding of ecology (Ugulu et al., 2015). The other approach involves on-campus thematic activities. For example, American researcher Williams (2011) developed a 40-minute recycling lesson for second and third-grade students using tangible props and examples, movie clips, and fun, interactive games. The lesson’s effect in improving students’ knowledge about recycling and their environmental attitudes and behaviors was evaluated through pre- and post-tests and audits of classroom waste. The results showed that even a one-time, short-duration intervention could positively affect students’ environmental attitudes and behaviors and mastery of knowledge about recycling. In China, certain basic education schools have experimented with delegating wastepaper handling to students, who were held responsible for collecting wastepaper produced on the campuses. This process could largely reduce wastes of paper in primary and secondary schools and successfully foster students’ understanding of the significance of paper recycling (Ge, 2018).

Experiments and initiatives like these have proved effective in enhancing students’ environmental awareness; nevertheless, there remain challenges in recycling education. For example, despite the strong awareness of recycling and high performance in waste sorting self-reported by students in questionnaire surveys, on-site investigations revealed low rates of successful sorting, reflecting weaknesses in practical training in current recycling education (Sağlam & Aydın, 2024).

Therefore, it is important to explore more practical and participatory modalities of recycling education. *The Effect of Project-Based Recycling Education on Recycling Knowledge Levels* in this issue is an investigation of the effectiveness of project-based learning in enhancing middle school students’ knowledge about household waste and recycling. Using a quasi-experimental design with an experimental group receiving project-based recycling education and a control group taught with the conventional approach, the study found that the former outdid the latter in recycling knowledge improvement and environmental awareness enhancement, based on a comparison of their pre- and post-test results (Çebi & Arslan, 2025). Even though its relatively small sample size and short intervention duration compromise the generalizability of its findings, the study remains a valuable reference for research on school-based recycling education.

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