

## **Earth Education for Sustainable Societies: A Middle School Perspective**

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Greta Thornberg, a 16-year-old Swedish climate activist, made headlines by sailing from Europe to New York City to speak at the United National Climate Action Summit. (Bernard, A.). In 2018, during her speech at the United Nations Climate Change Conference in Katowice, Poland, Greta said of climate change, “We cannot solve the crisis without treating it as a crisis.” (FridaysForFuture.org) Greta cites climate change science she learned in middle school as the primary catalyst for her activism. Middle school interdisciplinary learning approaches could serve as a model for development of K-12 and postsecondary Earth education for sustainable societies that include career exploration and training.

Career exploration begins in middle school. Newsela is a resource used to improve student reading skills across the curriculum. Newsela includes various articles under the topic “dream job.” The articles feature the stories of real people and can be used to introduce students to topic related career paths. In addition to reading about careers, middle school students have opportunities to explore careers through school-industry and school-university career oriented programs. Unfortunately, in high school access to such opportunities is more limited in high school

Interdisciplinary learning in middle school can empower youth to be community leaders. The National Geographic Geo-Inquiry Process provides an action oriented model to engage students in asking questions from observations, planning and designing investigations, collecting data, visualizing data, creating a story supported by evidence, and taking informed action beyond awareness raising (National Geographic Society). Through Geo-Inquiry Process, students use skills learned in math, social studies, language arts, and technology classes. Unifying themes like natural resource management, land use, environmental social justice, natural disaster preparation, and climate change

mitigation and adaptation are examples of Earth education for sustainable societies that can be adapted to high school and postsecondary settings.

As a grade 8 science teacher, I have used the Geo-Inquiry Process to involve students in land use management to reduce heat island effects, biodiversity management to sustain native plants and pollinators, sustainable Smartphone design to understand mineral resource consumption impacts, and local climate change mitigation and adaptation planning. Other possible interdisciplinary units for middle school include food security, waste management, ground water conservation, ecosystem management, and alternative materials to reduce one-use plastics. My students participated in the Rutgers Teen Climate Change Summit to present their projects to peers. Students learn science in the context of environmental, economic, and social impacts including the political realities of proposed actions. Learning for the purpose of taking action is a concept that could be applied to high school and postsecondary education.

International examples of sustainable societies can enrich interdisciplinary studies. The Transatlantic Outreach Program is compiling STEM units from sustainability lessons authored by teachers on study tours to Germany. Fulbright Japan has created a network of K-12 educators through Education for Sustainable Development exchanges and is currently focusing on sustainability integration into STEM. International studies are applicable to high school and postsecondary education. The dual education systems of Germany and Japan offer models that could be adapted for workforce training needed to support sustainable societies.

In conclusion, the middle school model of interdisciplinary study may be a starting point for examining new approaches to Earth education for sustainable societies in high school and postsecondary departmentalized learning environments. Steps to take include (1) developing a matrix of K-12 standards to uncover interdisciplinary opportunities, (2) identifying models and processes for implementing education for sustainable societies, and (3) exploring international models of Earth education for sustainable societies and career path training programming.

**Sources**

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