

# Improving Awareness of Marine Conservation and Sustainability among Taiwanese Middle School Students by Teaching Slow Fish Movement

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The ocean is the largest life support system on Earth. Through long-lasting evolution, an enriched variety of ocean specimens have been produced, thereby fulfilling human needs such as those of food, medicine, and marine recreation. Numerous marine products contain health-beneficial compounds; for example, oils obtained from multiple types of fish are enriched with Eicosapentaenoic acid (EPA) and Docosahexaenoic acid (DHA), which are beneficial to human eyes and brain development, respectively. Additionally, these components are immensely beneficial for controlling inflammation, lowering cholesterol, and replenishing calcium. Therefore, usage of marine products is closely related to the growth and development of the human body and regulation of its physiological functions; seafood is thus a key element of a healthy diet. However, human behavior and activities over the preceding ten years have posed the threat of damage to the health of ocean environments and productivity of marine resources. Hence, marine conservation and generating awareness of it is a pivotal task.

The study aimed at measuring the impacts of Slow Fish Movement curriculum on students' marine purchasing and eating habits along with determining the changes in student's understanding level regarding marine awareness and sustainability. For the same, a questionnaire designed for Slow Fish Movement (SFM) curriculum map with core values derived from Sustainable Development Goal 14 (SDG 14) in the United Nations, Slow Fish promotion in Italy, as well as Principles for Seafood Consumption Recommended by Taiwan Seafood Guide. The study objects were seventh and eighth-grade students of Er-Xin Middle School in Keelung city. The experiment lasted for three weeks. The experimental group contained 1,007 students and compared their performance difference with pre-test & post-test. Of the 1,070 questionnaires distributed, Invalid questionnaires were 63 and thus eliminated—resulting in 1,007 valid responses, the overall response rate was 94.11%. Before the SFM course, a pre-test was conducted to understand students' original knowledge, attitudes and behaviors in life about marine conservation and sustainability. After SFM course for three weeks, a post-test was conducted to understand if students improve understanding levels on ocean conservation and sustainability. After retrieval and sorting of the responses, the statistics software SPSS 20.0 for Windows was used to calculate the mean and standard deviation and conduct paired sample *t*-test. The result revealed:

The most common consumption seafood by mistake in Taiwan Seafood Guide "SAY NO" criterion is Cuttlefish which usually caught by methods that destroy marine habitats. Slow fish movement curriculum map significantly impacted students' judgments on selection environment-friendly of seafood consumption ( $t = -46.229, p < .001$ ) After taking the course of Slow Fish Movement that students exhibited significantly increased understanding of marine conservation and sustainability ( $t = -19.064, p < .001$ ).

Sustainable development is the core target of Global growth. Teaching SFM curriculum map to promote awareness of environmentally friendly seafood-purchasing methods can enable consumers to eat more

healthily and ocean ecology to be protected, thereby helping ocean ecology to recover its bioenergy.

Keywords: Slow Fish Movement, Sustainability, Marine Conservation, Taiwan Seafood Guide, Sustainable Development Goals (SDGs)

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