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# HydroMediT 2021

## 4th International Congress on Applied Ichthyology, Oceanography & Aquatic Environment

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Organised by

Department of Ichthyology and Aquatic Environment (DIAE), School of Agricultural Sciences, University of Thessaly (UTh)

Department of Marine Sciences (DMS), School of the Environment University of the Aegean (UoA)

Department of Animal Production, Fisheries & Aquaculture University of Patras

Panhellenic Society of Technologists Ichthyologists (PASTI)

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# CAN MARINE SCIENCES STUDENTS SUPPORT THE OCEAN LITERACY FRAMEWORK? A PILOT STUDY FROM GREECE

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**Abstract**
The present pilot study aims at evaluating knowledge, attitudes, and behaviour concerning ocean issues in relation to university students in Greece. A 3-scale questionnaire was developed and administered to 106 students. Results revealed that Marine Sciences students were found to have better knowledge as well as pro-environmental attitudes and behaviour in relation to their counterparts from the Primary Education Department. However, the low to moderate knowledge scores observed in the participants of the survey reveal the need for integration of relevant concepts, and further education research on Ocean Literacy (OL) issues to ensure the sustainability of the ocean.
**Keywords**: *Ocean literacy, Tertiaty education, Students, Knowledge, Attitudes, Behaviour*
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## 1. Introduction

The United Nations (UN) recently declared a Decade of Ocean Science for Sustainable Development (2021-2030) to run along with the Agenda 2030 for Sustainable Development which includes 17 Sustainable Development Goals (SDG). For SGD 14 (the sustainability of the ocean and its resources) to be achieved, the need to increase societal awareness of Ocean Literacy (OL) is paramount (Eparkhina *et al.* 2021). The OL framework, consisting of 7 essential principles and 45 fundamental concepts, is now accepted worldwide for use in both formal (schools, universities) and non-formal (e.g. research centres) education settings: this is an invaluable support for citizens to obtain sound knowledge of ocean issues, enabling them to communicate about ocean issues and make informed and responsible decisions (Cava *et al.* 2005). To make progress in this direction, the present pilot study aims at evaluating knowledge, attitudes, and behaviour of university students (future marine scientists and/or educators) in Greece concerning ocean issues.

## 2. Material and Methods

A cross-departmental pilot study was conducted involving a group of university students from a Marine Sciences (n=37 of 1st year and n=34 of 3rd, 4th) and a Primary Education (n=35) Departments. Students from the Primary Education Department served mainly as a reference group, though they also attend several environmental classes. A 3-scale questionnaire concerning their knowledge, attitudes, and behaviour was developed and administered to the participants, taking into consideration previous research carried out within the framework of Ocean Literacy (NMEA 2010; NOAA 2013; Mogias *et al.* 2015, 2019; Fauville *et al.* 2018). Moreover, the normality (Kolmogorov-Smirnov and Shapiro-Wilk tests) and reliability (Cronbach α index) for all scales of the questionnaire were also checked.

## 3. Results

Marine Sciences students were found to be significantly more knowledgeable and possess more positive pro-environmental attitudes and behaviour, as expected, in relation to their counterparts from the Primary Education Department (Fig. 1). The majority of students of both Departments, however, seemed to be unaware of ocean issues such as the connectedness of the ocean basins and the origin of atmospheric oxygen. They also believe that fragile marine ecosystems will be lost if humans do not change their behaviour towards the ocean. Most of both groups collect their garbage when they spend time on the beach and they recycle plastic. Further in-depth analysis of the Marine Sciences students' sub-sample revealed a slight increase in all scales from year 1 to the end of their studentship (Fig. 2).

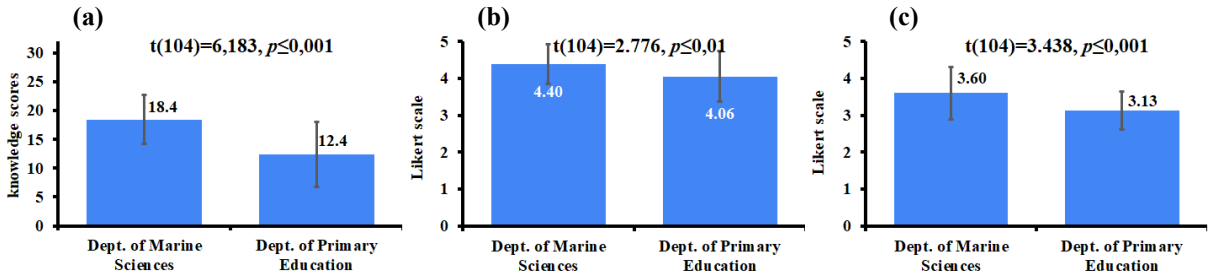


**Figure 1. Mean knowledge (a), attitudes (b), and behaviour(c) values (a 5-point Likert scale was applied for (b) and (c)) of the total sample of participants**

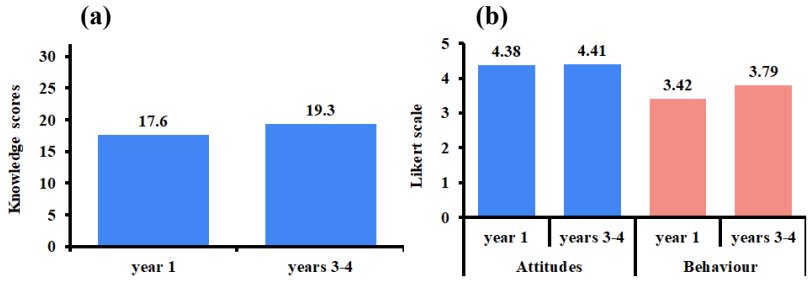


**Figure 2. Mean knowledge (a), attitudes (b), and behaviour (c) values (a 5-point Likert scale was applied for b and c) of the Marine Sciences students on the basis of the year of enrollment**

## 4. Discussion

The results of the pilot study showed an interesting pattern in the correct answers, regarding the most difficult and the easiest questions, which demonstrated that these are in line with other findings from the existing literature (e.g., Mogias *et al.,* 2015; 2019). However, results should be considered indicative as the study included a relatively small sample of students from both Departments. Nevertheless, the slight increase of Ocean Literacy in all scales of the Marine Sciences students from the lower to the upper academic years, taken along with the low knowledge scores from the Primary Education student group, point up the need to integrate relevant concepts (e.g., development of OL tools; Brennan *et al.,* 2019) and for further research to investigate in-depth OL issues in formal education.

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