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BOOK OF ABSTRACTS

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Melita Mokos, Chair of the Organizing Committee, Department of Ecology, Agronomy and Aquaculture, University of Zadar, Croatia
Ivana Zubak Čižmek, Department of Ecology, Agronomy and Aquaculture, University of Zadar, Croatia
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Ivana Zubak Čižmek, Department of Ecology, Agronomy and Aquaculture, University of Zadar, Croatia

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MARINE POLLUTION FROM MICROPLASTICS: THE CONTRIBUTION OF NON-FORMAL EDUCATION TO THE DEVELOPMENT OF KNOWLEDGE, ATTITUDES, AND BEHAVIOURS IN GREEK PRIMARY SCHOOL STUDENTS

Mogias A.[1], Koutantou E.[2]

[1]*Democritus University of Thrace, Greece*
[2]*Cretaquarium, Greece*

As the production of goods made from plastics has increased in recent decades, their presence as pollutants has grown rapidly. With the increased use of these products and at the same time the improper management of the waste produced during their manufacture and disposal, modern societies have heavily polluted marine ecosystems. Both formal and non-formal education are expected to play an important role in facing these problems and in shaping pro-environmental attitudes and behaviours. This study focuses on the potential of non-formal education to feature marine microplastic pollution issues and presents the benefits of a short teaching intervention to primary school students. One hundred thirty-five students from 6 schools, attending grades 3 (8-9 years old), 5 (10-11 years old), and 6 (11-12 years old), participated in a 3-hours intervention that was specially designed and carried out at "Thalassokosmos" aquarium of Crete, Greece, focusing on marine pollution by microplastics. Students conducted a series of hands-on experiments and used stereoscopes to understand the huge problem of marine pollution in general and microplastics in particular. They were given a tour of the aquarium observing the various marine ecosystems and the organisms living in them, and were displayed several images through comics and photographs showing the impact of microplastics on marine organisms and ecosystems. Interactive screens with digital games and quizzes about Mediterranean marine mammals and the effects of pollution on them were also used during the intervention. To assess the impact of the intervention, the same questionnaire was administered to the students before and after the intervention. More specifically, the questionnaire consisted of (i) demographic questions (e.g., gender, grade, participation in environmental education programs, sources of information about marine issues), (ii) 12 multiple-choice questions covering knowledge of plastic waste, microplastics, their hazards, and measures to tackle plastic pollution, and (iii) 10 statements evaluating their degree of agreement regarding attitudes and 10 statements regarding behaviours respectively, following a 5-point Likert scale. In terms of data analysis, descriptive (mean values, standard deviations, frequencies) and inferential statistics (t-test for independent samples and one-way ANOVA univariate analyses) were performed. The results revealed significant differences between students' initial and final perceptions and beliefs in all survey parameters as a result of their participation in the teaching intervention that took place in the aquarium This intervention, although short in time, proved to be a fruitful contribution to the existing school curriculum, mainly due to the limited possibilities and the "tight"

curriculum that is met in the Greek educational system. This becomes even more important when discussing non-common topics, such as ocean literacy and more specifically marine microplastics. Finally, the teaching intervention was very beneficial for both students and teachers as they were engaged with constructivist, discovery, and authentic teaching and learning conditions and were involved in a highly collaborative and interdisciplinary way; at the same time, they were also given the opportunity to communicate directly with the scientists who produce new knowledge through pure scientific research.