

Empowering children to make informed decisions in the SW Indian Ocean: analysis of the Educational Marine Areas program

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Short bio/Designation position for each author

Georgeta Stoica is an Associate Professor of Anthropology at the Centre Universitaire de Formation et de Recherche of Mayotte Island. Presently, she coordinates the AQUAMARINE 2.0 research projet on marine educational areas in the Indian Ocean more precisely in Mayotte, Reunion island and Madagascar that has been funded by Fondation de France. She works closely with colleagues having a background in natural sciences establishing a fruitful dialogue in interdisciplinary projects.

Philippe Charpentier is an Associate Professor of Educational Sciences whose research focus concern the thematic analysis of teacher instructional practices and students' responses to such practices in elementary schools.

Lola Massé has a PhD in Marine Biology and is a specialist of coral reproduction and recruitment in the SW Indian Ocean. Presently, she is the project manager of PAREO project "The coral reef heritage of the Indian Ocean in our hands" focusing on environmental education in SW Indian ocean area and dissemination of scientific results within the general public.

Christelle Morel is working for the Natural Marine Reserve of Reunion Island and she is the policy officer of Educational Marine Areas implemented on the island since 2016. She is a specialist of environmental education and development.

Karine Pothin is the Director of the Natural Marine Reserve of Reunion Island. She has a PhD in marine biology focusing on the life cycle of coral reefs fish of Reunion Island. She is one of the "core group promoters" of educational marine areas (EMA) implementation and development in Reunion Island.

Allen Cedras is the Chief Executive Officer at Seychelles Parks and Gardens Authority and is a specialist of protected areas management.

Pascale Chabanet is a researcher director in marine biology. She has led several scientific research projects and her publications and active engagement for coral reefs conservation is recognized at a national and international level. Her main research subject is the ecology of fish associated with coral reefs in the SW Indian Ocean and West Pacific. During the last decade, she has been actively involved in the activities of environmental awareness and dissemination of research results by means of an educational tool kit MARECO, developed in collaboration with the ecologist and biostatistician Jocelyne Ferraris.

Summary

Background:

An Educational Marine Area (EMA) is a relatively new concept in environmental education established in 2012 in the Marquesas Islands (French Polynesia). It represents an educational programme and environmental awareness concept that implies the participatory management of a coastal marine area by pupils of primary schools. EMAs aim at enforcing the link between Science and Society and empowering children for better decision-making in issue related to the protection of the marine environment. Within the EMAs, the main actors are children who actively participate in educational projects set up locally by teachers in connection with the French national education programs with the aim of educating them about the marine environment and making them responsible for their future actions. An essential element of this approach is the meeting between the children in charge of an EMA, their teacher, and maritime professionals, in particular members of environmental associations, scientists and elected officials where the EMA is located; the objective being to ensure the transmission of knowledge and *know-how* to the next generations who can be qualified as budding eco-citizens. In the context of the diffusion of this original concept in metropolitan and overseas France, a general analytical reflection on participatory management in marine educational areas is proposed based on a study concerning (a) the active involvement of pupils in the management of their EMA and their representations of the marine environment and (b) the governance at different EMA levels in order to identify the barriers and levers for their implementation and development in the SW Indian Ocean. Starting with 2016, several EMAs were established in the Western Indian Ocean, five in Reunion Island and one in Mayotte. This presentation builds on the research results of AQUAMARINE and PAREO/DIDEM project and will mainly focus on the Reunion Island case study and the output of this experience and its impact on pupils, teachers, parents and decision-makers. The first research results and the “success story” of the EMAs in Reunion Island were used to extend the concept internationally and adapt it to the context of Seychelles. The main research hypothesis is that the implementation of EMAs and their sustainability would increase the production of scientific data via this new modality of doing science in schools, contribute to the empowerment of tomorrow's eco-citizens, to the improvement of the dialogue between society actors and scientists and finally to the increase of MPAs acceptability for local communities.

Methods:

Qualitative research methods were used in order to gather in-depth information and grasp the point of view of the children and key actors involved actively in the management of ‘their’ EMA. By means of participant observation, in-depth interviews, public records, analysis of children school productions and interviews, the research team gathered scientific data during four months between 2021 and 2022. The qualitative research methods employed during the research process were used not only to understand « what » people and children think about EMA but also « why » they think in that particular way and for what reasons they are actively implied in the management of an educational marine area. The interdisciplinary approach of the research is also one of the key features of the methodology employed in the research.

Results

As it has been shown by many scientific articles, environmental education is one of the indispensable pillars to sensitize and promote new behaviours among children, citizens of tomorrow. The results of our research show that the establishment of EMAs have a positive

impact on the children that are taking care of a marine area. As a snowball effect, the parents but also the teachers implied are changing their way of envisioning the environment. A major result is the outcome of pupils' request during the children's sea council that discussed the actions to be implemented in Saint Leu EMA: the establishment of the first non-smoking beach in Reunion Island. This proves that a dialogue with the political representatives is possible and that the children do have the power to change the course of events.

Conclusion

Educational Marine Areas (EMA) represent for the SW Indian ocean area a promising and original concept of environmental education that helps the pupils to better understand their environment and become real actors of its conservation. It has also a powerful impact on the teachers involved in the process, on children's' parents and not last on the decision-makers that are more inclined to question their views and actions for the environment. In Seychelles, the first EMA experience brings up many ideas for environmental education showing that the concept is definitely applicable at the international level to reinforce the social acceptability to marine conservation of communities associated with MPAs.