

Future Maore Reefs : A New Way Of "doing And Teaching Science" In Elementary Schools. The Case Study Of Mayotte Island

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Background

Elementary science education is rarely a priority for French primary school teachers even though it is an integral part of the teaching curriculum. The difficulty comes from the fact that primary school teachers give priority to teaching French and Mathematics, which are admittedly national priorities, but also from their lack of interest and knowledge in science. Nevertheless, today, environmental issues are societal issues and the purpose of the school as an institution is to prepare future citizens capable of making proposals and having a clear view of the issues that our society is currently facing. Scientists, particularly marine biologists and ecologists, are working on the question of the effects of global changes, particularly global warming on the health of corals and, more generally, on the maintenance of coral reefs, in order to identify possible solutions based on nature (and therefore sustainable) in order to better preserve and restore them. But to better conserve these endangered ecosystems, the scientific team of our project involves many stakeholders: elementary schools, private companies, environmental associations, local authorities such as the Mayotte Natural Marine Park of Mayotte and the general public. One of the objectives of the interdisciplinary Future Maore Reefs project team, which includes researchers in the humanities and social sciences, marine biologists-ecologists and modellers, is to test a new experimental design of artificial reefs with coral cuttings to determine the coral assemblages that play a major role in reef functioning. One of the team's other objectives is to fully involve the local population and the various stakeholders in the protection of the reefs. To this end, the research team is developing a new approach to environmental awareness by transferring its knowledge to primary school children via classroom or field activities in the lagoon area, by practising coral cutting and by accompanying them in the creation of an exhibition presenting their activities and involvement in the Future Maore Reefs project. Sharing is therefore done through the scientists' findings, hypotheses, working methods and in vivo scientific experiences. In this way, this project allows young children to have access to the work of scientists by learning about their findings, by being at their side to carry out some of their experiments, to measure their effects, to develop their critical thinking skills and to ensure that the results of their activities are disseminated to them and to the society around them. Four primary school classes are involved in the Future Maore Reefs project: two classes in the Paris region and two classes in Mayotte island.

The purpose of this paper is to report on this new approach to environmental

education and awareness-raising throughout a school year research in two primary school classes in Mayotte: a « control classroom » and a « test classroom » (class fully involved in the project). We remember here that the island territory of Mayotte is located in the Indian Ocean, north of the Mozambique Channel, between Madagascar and the Mozambican coast of the African continent.

Method

The Future Maore Reefs project, in its educational component, aims to share with primary school pupils the concerns and research hypothesis that coral reef researchers are carrying out in response to the current environmental issue of global warming and its effects on reefs and corals in particular. The scientists involved in the project interact with the pupils by providing them with knowledge, tools, a specific language and methods, providing scientific dissemination sessions with the pupils and their teachers on the issue of global warming and its effects on corals. Moreover, the work carried out with the pupils on the coral cutting technique and the follow-up of these experiments over time it is at core of our research methodology. The pupils are thus "actors" (Participatory Science), in the same way as the scientists involved in the project.

The monitoring of this knowledge-sharing activity between scientists and pupils is carried out by an interdisciplinary team of researchers in educational sciences, anthropology and marine biology. The aim is to measure, in terms of appropriation and dissemination of knowledge, the contribution of this knowledge-sharing experience to pupils, teachers and the society around them. The researchers measure and analyze this impact through interviews with pupils, teachers, families and people who attended the various public presentations of this experience.

Results

The results of this experience of sharing knowledge between scientists and pupils on the issue of global warming and its impacts on corals and reefs show an added value in terms of knowledge for pupils and teachers in Mayotte, students and teachers who are closest to the problems related to this issue. Paradoxically, these students, who live not far away from the lagoon and coral reefs, did not know much about corals or the problems they face. This fact also shows the difficulty that primary school teachers face (in terms of knowledge and legitimacy to raise these issues) in teaching and working on environmental issues that are nevertheless topical and linked to the society around them.

Conclusion

The aim of the Future Maore Reefs project is to involve primary school pupils in Mayotte in scientific experiments conducted by coral reef specialists who are interested in global warming and its effects. The results of this experience of sharing knowledge between scientists, teachers and pupils show that the project provides added value for the actors involved in the project in terms of knowledge for pupils and teachers, but also in terms of awareness of the environmental problems linked to global warming and its effects on the reef environment.