

REPORT

Workshop on Climate Change Education

Mauritius

Webinar :

2 half days online workshop on Climate Change Education, 29 to 30 June 2021.

Facilitators: Mathilde Tricoire, Simon Klein, David Wilgenbus

Face-to-face workshops :

4 days on Climate Change Education in Mauritius, 22 to 25 November 2022.

Facilitators: David Wilgenbus, Nicolas Vogt, Simon Klein

Nature, context and objectives of the workshop

Nature of the workshop

The mission is a 4-day teachers' training workshop targeting teachers, teachers' trainers, researchers and educators from primary, middle and high school in Mauritius island and Rodrigues island from the Republic of Mauritius.

This workshop is a follow up of a 2 days online workshop that took place in June 2021, done remotely due to the pandemics.

Context

The Office for Climate Education (OCE) was launched in March 2018 with the aim of organizing international scientific, pedagogical, and operational cooperation for climate change education: its work focuses on the development of educational resources, teacher training and support to educational institutions. Since 2020, OCE is a UNESCO category 2 center. The present mission is the result of a collaboration with WFEO, IEM and MIE with the support of the Ministry of Education and UNESCO. All the workshop sessions and activities were conducted in English, except for one (a serious game, in French). Note: French and English are commonly spoken in Mauritius.

Organizers

The training has been co-organized with the *Office for Climate Education (OCE)*, the *Mauritius Institute of Education (MIE)*, the *Institute of Engineer in Mauritius (IEM)*, the *World Federation of Engineering Organizations (WFEO)*, as well as the SANDWATCH project.

Funds came from the National Environment Agency of Singapore.

The initiative of conducting such workshop (online and then face to face in Mauritius) comes from a collaboration between WFEO and OCE, under the solicitation of Dr. Marlene Kanga, previous president of WFEO.

Objectives

This workshop had different objectives:

- Pedagogical Objectives:
 - To get familiar with challenges and methods of climate change education in primary and secondary schools (Inquiry Based Pedagogy, project-based learning, interdisciplinarity, emotions, critical thinking...)
 - To reflect on one's own practice as a teacher, educator or inspector, through developing curricula or pedagogical sequences.
 - To discover project-based pedagogy through a field trip on the beach with Sandwatch project.
 - To discover the educational resources developed by the OCE and partners such as Sandwatch project.
 - To Reflect on the place of Climate Change Education (CCE) in school curricula and identify possible levers for change.

- Scientific Objectives:
 - Upgrade scientific knowledge on climate change, physical, chemical, and biological phenomena, and associated consequences, both globally and locally.
 - Cover the solutions targeting mitigation or adaptation to climate change developed by engineers locally in Mauritius.
- Strategic objectives:
 - For the OCE: increase the collaboration with WFEO, UNESCO and MIE, and conduct a pilot event for inspiring a future project in Africa (ARRICE project). Note: As satellite events, before the workshop, OCE organized meetings with African partners (Senegal, Mauritius, Kenya) on the establishment of regional project (ARRICE project). The first day of the workshop was also open to the stakeholders of the ARRICE project as a demonstration of OCE international workshops on CCE.
 - For the MIE: strengthen their network of teachers, educators and pedagogues from Mauritius and Rodrigues islands; and their relations with the Mauritius Ministry of Education.

Workshop description

Participants

Online workshop (June, 2021)

The training benefited 80 participants from Mauritius and Rodrigues, 54 teachers (middle and high school) and 26 trainers. **For more details, see the dedicated report of the online workshop sent in 2021 (in French).**

Face to face workshops (November, 2022)

The 4 days workshop benefited 44 participants; 17 teachers' trainers; 21 teachers – primary and middle schools – and 5 inspectors.

2 of the teachers came from Rodrigues, and the others from Mauritius Island.

Contents – Process – Evaluation: Online workshop (June, 2021)

1st Online Workshop

Tuesday (29th June 2021)

09.00 – 09.45	Welcome by Director MIE, President of IEM Introduction of partners: WFEO, UNESCO, OCE Presentation of main objectives	MIE Director/IEM President OCE
09.45 – 10.30	Challenges and specificities of climate education	OCE
10.30-10.45	Questions and Answers	OCE, All
<i>10.45 – 11.00</i>	<i>Break</i>	
11.00 – 11.45	Greenhouse effect and climate system	OCE
11.45-12.00	Questions and Answers	OCE, All

Wednesday (30th June 2021)

09.00 – 09.30	Summary of Day 1 Presentation of current curricula and local actions	Dr R. Bholah, MIE
09.30 – 10.00	Presentation of Climate Change educational material for primary & Secondary schools	OCE
10.00 – 10.30	Curriculum Design Task setting for preparation of curriculum development for presentation in September 2021 workshop	Pr A. B. Rumjaun, MIE
10.30-10.45	Questions and Answers	OCE, All
<i>10.45 – 11.00</i>	<i>Break</i>	
11.00 – 11.15	Presentation of CCE programme in September workshops	OCE
11.15 – 11.30	Closing – the way forward	Dr R. Bholah, MIE

Assessment of the training

Participants' assessment

Although the training was done online, due to health constraints, the participants and trainers allowed a lot of interaction and exchange, through questions and answers during the presentations, either directly via the Zoom chat or via the Wooclap application. At the end of the training, the participants received an online satisfaction questionnaire, the main results of which are presented below (19 responses):

- *The seminar allowed me to acquire new scientific knowledge on climate change: 4.3/5*
- *The seminar allowed me to acquire new pedagogical skills: 4/5*
- *The speakers were of high quality: 4.5/5*
- *The format of the seminar was adapted to my needs: 4.4/5*
- *The seminar allowed me to discover new teaching resources: 4.3/5*
- *The seminar allowed me to discover new projects: 4.2/5*
- *The seminar motivated me to use OCE's resources: 4.3/5*
- *I plan to implement projects around the theme: 4.5/5*
- *The speakers clearly stated the next step in the training process: 4.5/5*
- *The teaching material (worksheets, material...) used was satisfactory: 4.2/5*
- *The pace of the seminar and the breaks were appropriate: 4.1/5*
- *The seminar was quite interactive: 4.5/5*
- *I had the possibility to exchange with the speakers: 4.3/5*

The overall average of the evaluations is 4.3/5. We can observe from these results that the trainees are very satisfied with the training week.

The elements that participants criticized were: *Only informative. Information about climate change can be found anywhere / The timing*

Avenues for Improvement:

- *More pedagogical strategies provided to teacher other than videos*
- *Videos of actual lessons in action*
- *Clustering to be more efficient.*
- *Can be more of a Hands-on workshop*

Desires for the hands on session in November:

- *Art related*
- *Project based activities*
- *Examples of hands on activities*
- *brainstorming session on project development i.r.t climate change education and framework underpinning the integration of CC in the curriculum*
- *Design of concrete sustainable actions that we can implement at school level*
- *Curriculum design*
- *Those that could be adopted and adapted for the primary sector, bearing in mind the mixed ability levels of the pupils and availability of resources at schools.*

Trainees' conclusion: The training was highly appreciated by the participants and the organizers, the few criticisms expressed being related to the health situation, having forced a distance format that did not allow for certain hands-on activities.

OCE's trainers assessment

Despite the early morning hours and some connection and battery problems, the online workshop went very well!

Some fears had been shared beforehand by the OCE team, notably about the fact that there were few oral participations; or that the participants would not "play the game" of exchanges because of the remote organization: on the contrary, this session was very interactive.

In addition, although some exchanges took place very late in the day about co-facilitation, the MIE or IEM interventions were well thought out and went very well.

This session was very positive and confirmed the value of a hybrid approach. It also confirmed the angle chosen for the second session, which was very practical: hands-on, Sandwatch, project design and curriculum reform. At the end of this training, a longer-term collaboration was discussed between the different partners.

Contents – Process – Evaluation: Face to face workshops (November, 2022)

Speakers at the official opening ceremony:

- Mrs. Aneeta Ghoorah, Director in Ministry of Education, Tertiary Education, Science and Technology (Primary Education, UNESCO & Curriculum Development & Evaluation)
- Mrs. A. Kawol Divisional Environment Officer, Department of Climate Change Ministry of Environment, Solid Waste Management and Climate Change
- Mr. Raj H. Prayag, G.O.S.K., Hon President of Institution of Engineers Mauritius.
- Dr R. Bholah, Associate Professor Head, School of Science and Mathematics Centre of Open & Distance Learning (Administrative - Head) ESD Coordinator MIE
- Mr. David Wilgenbus, executive director, OCE (France) ;

Facilitators of the workshops:

The content and activities has been co-constructed between the OCE, MIE, Sandwatch and WFEO. Facilitators were:

- David WILGENBUS, executive director, OCE (France) ;
- Nicolas VOGT, education officer, OCE (France) ;
- Simon KLEIN, science officer, OCE (France) ;
- Anwar Bhai RUMJAUN, Head of School of Science and Mathematics, MIE (Maurice).
- Engineers of Mauritius:
 - Mr. Beas Cheekhooree, Director, Green Agro Farms
 - Dr. Asish Seeboo, Head, Civil Engineering Department, UoM
 - Mr. Madoo Desha, Sustainability Consultant
 - Dr (Mrs) Yashwaree Baguant Moonshiram, Senior Lecturer, University of Mauritius
- Dr. RAGOONADEN (Sandwatch project)

Tuesday 22 November 2022

- 09.00 – 10.35 **Official Opening Ceremony**
- 10.35 – 10.55 *Tea break & group photo*
- 10.55 – 11.05 **Climate Change context in Mauritius**
*Ministry of Environment, Solid Waste Management
and Climate Change*
- 11.05 – 11.15 **Overview of the workshop on CCE**
OCE
- 11.15 – 12.45 **Greenhouse effect and climate systems (1) ***
Hands' on session + scientific background
OCE
- 12.45 – 13.30 *Lunch*
- 13.30 – 15.00 **Greenhouse effect and climate systems (2) ***
Hands' on session + scientific background
OCE
- 15.00 – 15.15 *Tea break*
- 15.15 – 16.00 **Conclusion on Day 1**
OCE

Wednesday 23 November 2022

- 09.00 – 10.30 **Ocean and climate change (1) ***
Hands' on session + scientific background
**Themes: Sea level rise, corals, carbon cycle,
mangroves etc.**
OCE
- 10.30 – 10.45 *Tea break*
- 10.45 – 11.40 **Ocean and climate change (2) ***
Hands' on session + scientific background
**Themes: Sea level rise, corals, carbon cycle,
mangroves etc.**
OCE
- 11.40 – 12.00 **Introduction to UNESCO Sandwatch: Adopting to
climate change and educating for sustainable
development**
Hands' on Programme for Ocean Education
Association pour le Développement Durable (ADD)
- 12.00 – 12.45 *Lunch*
- 12.45 – 13.30 *Trip to Flic en Flac*
- 13.30 – 16.00 **Sandwatch: On-site field activities at Flic en Flac beach**
OCE

Thursday 24 November 2022

09.00 – 10.30	Group 1 * Critical thinking: Hands' on session + scientific background Group 2 * Eco-anxiety: Hands' on session + scientific background OCE
10.30 – 10.45	Tea Break
10.45 – 12.00	Role of engineers in climate adaptation & mitigation experiments, project-based constructions + scientific background <i>Example of themes: renewable energies, eco-housing, eco-transportation, hydroponics, etc.</i> IEM (with support of Mauritius Institute of Education and OCE)
12.00 – 12.45	Lunch Break
12.45 – 14.45	Curriculum design (1) * Conceptual scenarios for primary/secondary schools
14.45 – 15.00	Tea Break
15.00 – 16.00	Curriculum design (1) * Conceptual scenarios for primary/secondary school

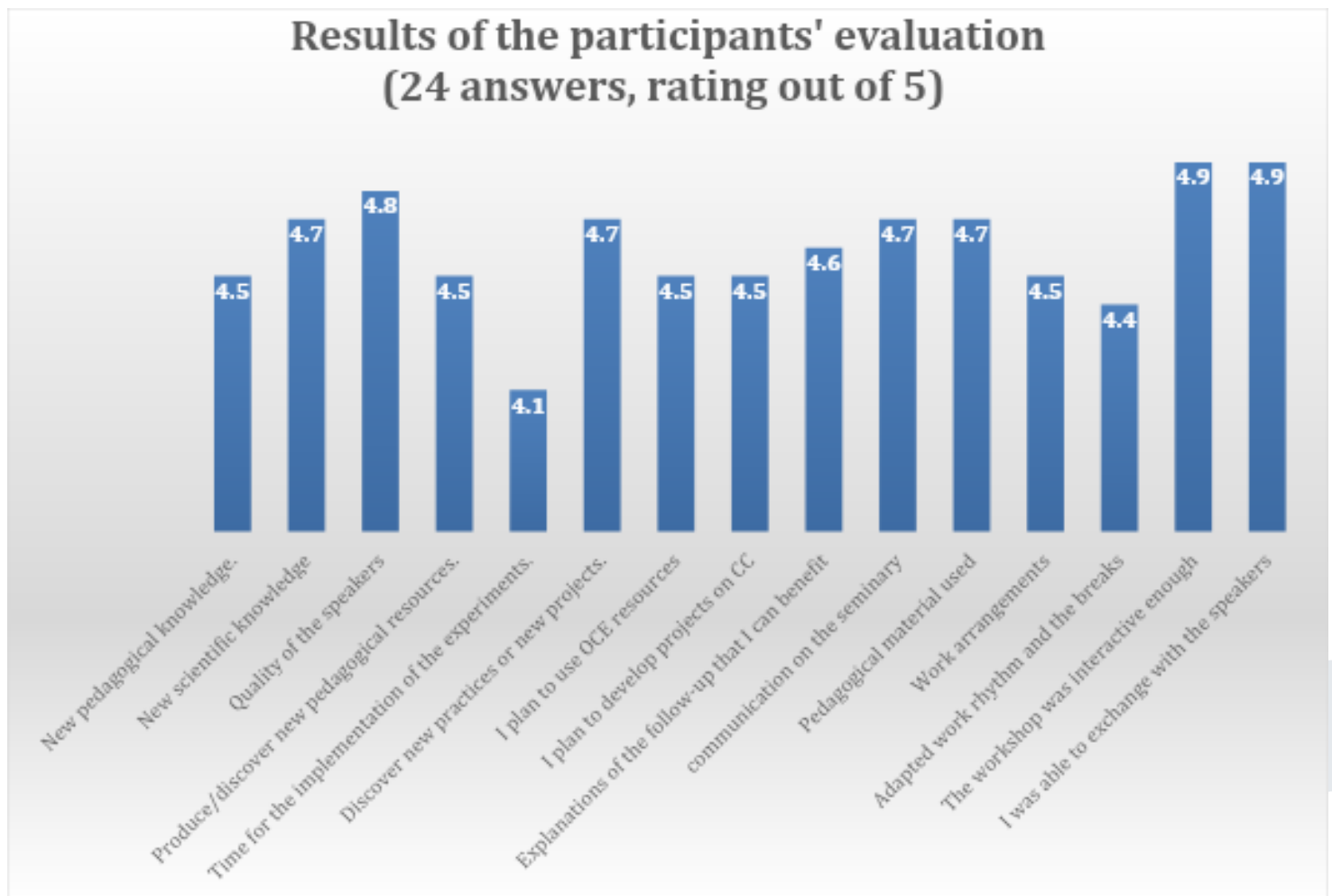
Friday 25 November 2022

09.00 – 10.30	Curriculum design (2) * Designing curricula Production by participants, (animation OCE + MIE)
10.30 – 10.45	Tea Break
10.45 – 12.00	Curriculum design (2) * Designing curricula Production by participants, (animation OCE + MIE)
12.00 – 12.45	Lunch Break
12.45 – 15.00	Presentation of the curricula prepared by participants & discussion All participants
15.00 – 15.15	Closing Ceremony

Assessment of the training

Participants' assessment

The participants and trainers allowed a lot of interaction and exchange, through questions and answers during the presentations and activities. At the end of the training, the participants received an evaluation questionnaire, the main results of which are presented below (24 responses, same questions that for the online workshop plus a few specific to face-to-face training).



We can observe from these results that **the participants are very satisfied with the training week (notes between 4,1/5 and 4,9/5, with an average of 4,6/5).**

In detail, we observe that the participants are particularly satisfied with the acquisition of knowledge and skills during the workshops : *“A very rich and fruitful experience / It was very fruitful and got to learn many concepts and how to implement it in class / ...”*

We note that the results are significantly higher than those obtained through distance learning. This shows that face-to-face training has a considerable weight in this acquisition. Despite the quality of the facilitators and the resources offered in distance learning, human contact has an irreplaceable pedagogical value.

The greatest difference is noted in interactivity, for example the possibility for trainers to answer questions, or exchanges between trainers and teachers: *“They interact well while we were working in groups / They are very knowledgeable / Speakers from all spheres dealing with climate change issues provided a vast perspective and made the training more on spot and interesting”*

Here again, this is the obvious added value of face-to-face training (but also the time available over 4 days).

Finally, we notice that the teachers are considering new projects with their classes related to climate change education, as well as the use of new educational resources. We can therefore be confident about the impact of OCE's training on the change of teachers' pedagogical practices.

The elements that participants criticized were the time allowed for the implementation of the experiments:

- *“More time or days of workshop should be implemented to complete the activities”*
- *“Some extra time should have been allocated to conduct the hands-on activities as we had to wait to see the final results”*

This remark must be considered since the original length of the workshop was 5 days (it has finally been reduced to 4 days for financial reasons). Hands-on activities need a lot of materials and time. This may explain the note concerning the rhythm and the breaks. We remind here that Maurice's colleagues were in training during their vacations.

Trainees' conclusion: The training was highly appreciated by the participants and the organizers. The overall average of the evaluations is 4.6/5.

Feedback from MIE trainers and curriculum developers

The Mauritius Institute of Education (through the teacher educators/curriculum developers who attended the workshop) viewed this workshop as an opportunity to develop their content and pedagogical knowledge related to climate education. This workshop enabled participants to clear misconceptions related to climate change. In fact, the workshop provided them with the accurate scientific knowledge of greenhouse effect, global warming, and climate change from the presentations given and the activities put in place by the facilitators from the OCE. The activities included role play to illustrate the concept of green house effect, field work to showcase effects of and adaptation to climate change in a coastal region in Mauritius, a game on developing critical thinking and activities related to eco-anxiety. They found the facilitators very reachable, knowledgeable in their field of expertise and they got rich pedagogical insights underpinning teaching and learning of the science and non-science concepts related to climate change. For the MIE participants the facilitators were able to put up a learning/sharing ideas platform which was very enjoyable and conducive and this created lot of engagement.

They would have wished to attend all sessions, unfortunately they could not for those in the parallel sessions. They welcome more sessions on the curriculum design and development in any future workshop on climate change education. As a take home experience, they were happy to have been exposed to these innovative pedagogies which they think are of great significance in their own respective endeavors.

Feedback from OCE's trainers

This session was very positive and confirmed the value of a hybrid approach, and the importance of face-to-face workshop when it comes to pedagogy (inquiry, project, group work...). It also confirmed the angle chosen for the second session, which was very practical: hands-on activities, field visit, project design and curriculum reform. The words of local experts gave more depth and local anchorage to the interventions of the OCE.

On the OCE's point of view, the workshop has been a great success and provided a solid model of what could be done in Mauritius through the ARRICE project.

This workshop could be a strong basis to inspire new workshops in developing through the collaboration between OCE and WFEO.