

**TROP ICSU: Trans-disciplinary Research Oriented Pedagogy for
Improving Climate Studies and Understanding**
(<https://tropicsu.org>)

Report on the TROP ICSU Workshop for Teachers at Cairo, Egypt,

organized in collaboration with

**The Academy of Scientific Research and Technology (ASRT), Egypt
(15-16 April 2019)**

Workshop Title:	A Faculty Development Program cum Workshop on CLIMATE ACROSS THE CURRICULUM: EDUCATIONAL RESOURCES FOR TEACHERS
Date:	April 15-16, 2019
Venue:	Four Seasons Hotel Cairo at the First Residence, Cairo, Egypt
Organized under the Auspices Of:	Prof. Dr. Khaled Abd El-Ghaffar, Minister of Higher Education and Scientific Research Prof. Dr. Mahmoud Sakr, President of the Academy of Scientific Research and Technology
Facilitators from the TROP ICSU Team:	Dr. Rahul Chopra, Ms. Anita Nagarajan
Speaker(s) from ASRT and NRC:	Prof. Dr. Mahmoud Sakr, Dr. Sameh Soror, Dr. Moemen Hanafy
Team of Coordinators/Helpers:	Team from the Academy of Scientific Research and Technology (ASRT), Egypt
Number of Participants:	95
Disciplines/Subjects Taught by Participants:	Animal Science; Agricultural Sciences; Architecture; Biochemistry; Biological Sciences; Biotechnology; Chemical Engineering; Chemistry; Climate Change; Computer Science; Energy and Resources Management; Entomology; Environmental Sciences; Fisheries; Food Science and Nutrition; Forensic Medicine and Toxicology; Genetic Engineering; Infectious Diseases; Linguistics; Marine Environment and Pollution; Material Science; Mathematics; Medicine; Music Education

(Piano); Physics; Poultry Breeding and Genetics;
Veterinary Medicine; Virology

A detailed listing of the disciplines is provided in
[Appendix I: Disciplines/Subjects Taught by the
Participants](#).

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Summary of the Workshop

A **2-day workshop for university lecturers and professors** was conducted in collaboration with the Academy for Scientific Research and Technology (ASRT) Egypt at Cairo, Egypt, on April 15 and 16, 2019. The workshop was attended by 95 participants, including lecturers and professors from universities in Egypt. Two representatives from the Young Earth System Scientists (YESS) community also participated in the workshop.

TROP ICSU is grateful for the tremendous support and help from ASRT in planning and organizing all the logistics and arrangements.

The objective of the workshop was *to introduce the participants to digital teaching resources for teaching topics in the Sciences, Mathematics, Social Sciences, and Humanities using climate-related examples, case studies, and activities*. In addition, participants would be invited to review the educational resources of the TROP ICSU project and to provide their feedback on the appropriateness and ease-of-use of the teaching tools and lesson plans.



Group Photo: Workshop for University Lecturers and Professors, Cairo, Egypt

The workshop commenced with welcome remarks from Prof. Dr. Sakr, President of ASRT. Next, Dr. Sameh Soror (ASRT) and Dr. Moemen Hanafy (National Research Center, Egypt) addressed the audience comprising lecturers and professors with expertise and experience in a wide range of disciplines. Then, the TROP ICSU team provided an [overview of the TROP ICSU project](#) and its teaching resources. Over the next one and a half days, the teachers/educators worked in groups to carry out hands-on, interactive activities by using various [teaching tools](#) and [lesson plans](#) from the TROP ICSU website. They reviewed the teaching resources from the pedagogical and ease-of-use perspectives and provided feedback (via online review forms) to help in further enhancing the quality and effectiveness of the content. Further, participants worked in groups to develop new lesson plan ideas

to teach topics in various disciplines using climate-related and climate change-related examples. In these activities, participants engaged in peer-to-peer discussions and exchanged ideas for effective teaching using relevant examples. Group representatives presented the new lesson plan frameworks and ideas and discussed plans on the adoption of these new lesson plans in the classroom. The workshop concluded with a brief discussion on continued engagement and collaboration with the TROP ICSU project.

TROP ICSU had also invited two members of its partner organization, the YESS community, to participate in the workshop. The YESS representatives from the meteorology field provided an overview of climate-related topics for the Egyptian context.



Plenary Sessions at the Workshop for Teachers, Cairo, Egypt

Overall, the participants were keen on exploring ways to integrate climate science/climate change-related topics in their existing curriculum. They provided critical feedback on the existing teaching resources from the pedagogy perspective. Further, they actively participated in the creation of new

lesson plans and specifically, in the generation of lesson plan ideas that are relevant to classrooms in Egypt. Each group created a framework for one new lesson plan, and participants discussed steps for adopting the usage of the lesson plan in their teaching. Peer-to-peer discussions in groups enabled an exchange of ideas across disciplines and the development of new lesson plans.



Group Activity at the Workshop for Teachers, Cairo, Egypt



Group Activity at the Workshop for Teachers, Cairo, Egypt

Summary of the feedback received on the lesson plans from the TROP ICSU website

Explaining the topic(s) in the discipline: Approximately **97%** of the responses from the participants stated that the reviewed lesson plan was **very effective or moderately effective** in explaining the topic in the discipline.

Integrating the discipline topic(s) with climate science: **97%** of the responses from the participants indicated that the reviewed lesson plan was **very effective or moderately effective** in integrating the discipline topic(s) with climate science.

Using the lesson plan in the classroom: Approximately **88%** of the responses from the participants indicated that they **would use the lesson plan in their classroom as is or with some modifications**.

Detailed results for the lesson plan reviews are provided in [Appendix II: Review of Lesson Plans by Participants](#).

Summary of the feedback received on the teaching tools curated on the TROP ICSU website

Explaining the topic(s) in the discipline: Approximately **97%** of the respondents thought that the reviewed tool was **very effective or moderately effective** in explaining the topic(s) in the discipline.

Describing the tool: Approximately **95%** of the responses stated that the **tool description adequately shows how the discipline topic can be taught using a climate-related example, activity, or case study.**

Using the tool in the classroom: Approximately **84%** of the respondents indicated that they **would use the reviewed tool in their classroom as is or with some modifications.**

Detailed results for the teaching tool reviews are provided in [Appendix III: Review of Teaching Tools by Participants](#).

Details of the Workshop

Agenda and Overall Organization

The agenda of the two-day workshop was as follows:

- **Day 1:**
 - Introductions of the participants: Brief introductions including name, institution/organization affiliation, and disciplines/areas of specialization, expertise, teaching, and research

 - Presentation by the Academy of Scientific Research and Technology (ASRT) Egypt:
Welcome remarks by Prof. Dr. Mahmoud Sakr; introduction to ASRT and its work; objectives of the workshop
Welcome remarks by Dr. Sameh Soror and Dr. Moemen Hanafy

 - Presentations by the TROP ICSU team: Welcome remarks; introduction to the TROP ICSU project, overview and demonstration of teaching resources (teaching tools and lesson plans) by using examples from each discipline

 - Group-based activity by the participants (groups organized by discipline): Review of discipline-specific teaching resources available on the TROP ICSU website (one lesson plan and one teaching tool per group); providing feedback on teaching resources through online review forms

Open discussion on the review of teaching resources



Group Activity at the Workshop for Teachers, Cairo, Egypt

○ **Day 2:**

Introduction to the components of a lesson plan

Presentation by YESS community representatives: Introduction to and overview of topics related to climate change, including examples specific to Egypt; overview of the YESS community and its work

Group-based activity by the participants (groups organized by discipline): Creation of a new lesson plan based on an idea that integrates a climate topic with their regular teaching

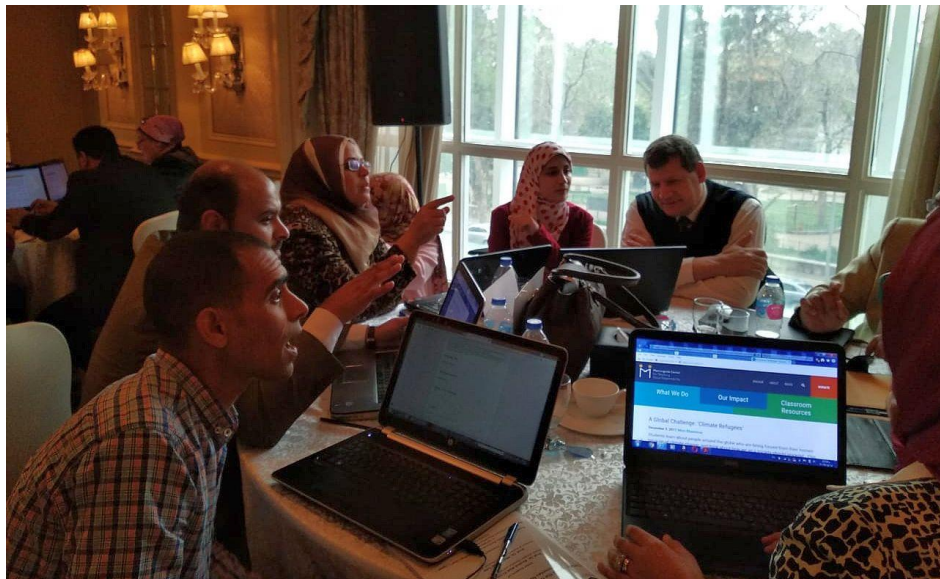
Presentation of new lesson plans by participants: Brief summary of the lesson plan topic and tools/resources by each group

Open discussions with participants: Feedback on the workshop and discussions on long-term engagement of participants with TROP ICSU

Closing remarks



Group Activity at the Workshop for Teachers, Cairo, Egypt



Discussions during a Group Activity at the Workshop for Teachers, Cairo, Egypt

Participant Feedback and Suggestions on Existing Teaching Resources

- Use videos with animated content instead of videos of in-class lectures
- Include datasets and examples specific to Egypt
- Provide translated versions (Arabic) of key teaching resources

Ideas for New Lesson Plans

Some of the new lesson plan ideas and frameworks created by the participants were on the following topics:

- Rheumatic Heart Disease and Climate Change (Medicine)
- Alienation and Inclusion in the Context of Climate Refugees (Humanities)
- Energy and Climate Change (Environmental Sciences)
- Marine Biodiversity and Climate Change (Biological Sciences)
- Electric Vehicles on a Smart Grid (Engineering, Environmental Sciences)
- Malignant Neoplasms and Climate Change (Dentistry)

Key Takeaways and Learnings from the Workshops

- From observations during the workshop, the key learnings for the teachers were: the idea of using teaching resources that integrate topics in climate science or climate change with topics in their discipline and the concept of creating new lesson plans that could be used across disciplines.
- Participants found the hands-on, interactive group sessions to be very useful and engaging.
- Peer discussions in groups helped in the exchange of ideas and enhanced participants' learning.
- Participants sought contextually relevant examples (Egypt) for their teaching; some of the lesson plan ideas generated during the workshop incorporated such examples.
- Teachers recommended the addition of new disciplines (such as Health Sciences, Medicine, and disciplines in Engineering)
- A participant suggested making the evaluation/feedback forms available on the website for a wider audience of teaching experts to provide their review comments
- Some feedback from participants:
"It was fantastic workshop, Please try to expand the idea to primary and prep school levels. Thanks a lot"

"Most of Students in developing countries have no access to internet in thier labs, but they can easily use thier mobile phone, so we have to pay further attention to the website in mobile version"

"[Add] More videos and games"

“It is excellent event and it better to extend the workshop for three days”

Next Steps

- Engagement by Team TROP ICSU with the participants to further enhance/refine the lesson plan ideas created during the workshop
- Modification of existing teaching resources (content and layout) based on analysis of feedback from participants
- Addition of region-specific (Egypt, Africa) case studies, activities, and resources by using the ideas generated during the workshop

Appendix I: Disciplines/Subjects Taught by the Participants

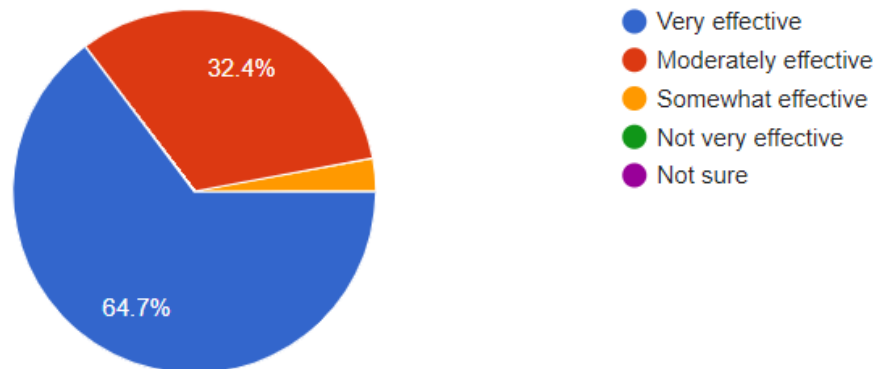
Administration; Analytical Chemistry; Animal Molecular Genetics; Animal Reproductive Sciences; Animal Science; Agricultural Sciences; Architecture; Biochemistry; Biodiversity Conservation; Biological Control; Biological Sciences; Bioremediation and Biofertilizers; Biotechnology; Cell Biology, Histology and Immunohistochemistry; Chemical Engineering; Chemistry; Climate; Climate Change; Clinical Chemistry; Computer Science; Economic Entomology; Energy and Resources Management; Electric Power Systems (Engineering) Entomology; Environmental Architecture; Environmental Hygiene; Environmental Plant Diseases; Environmental Sciences; Fisheries; Food Hygiene and Control; Food Science and Nutrition; Forensic Medicine and Toxicology; Foundation of Child Education; Freshwater Pollution; Genetic Engineering; Genetic Markers of Pollution; Infectious Diseases; Inorganic Chemistry; Islamic History; Linguistics; Marine Biotechnology; Marine Environment and Pollution; Material Science; Mathematics; Medicine (Cardiology); Medicinal Plants; Microbial Genetics; Molecular Biology; Molecular Genetics; Music Education (Piano); Oral Pathology; Organic Chemistry; Pests and Plant Protection; Pharmaceutical Chemistry; Pharmaceutics and Industrial Pharmacy; Photobiology; Photovoltaic Energy; Physical Chemistry; Physics; Plant Ecology; Plant Pathology; Plant Protection; Poultry Breeding and Genetics; Poultry Physiology; Poultry Production; Renewable Energy (Solar Energy); Veterinary Medicine; Veterinary Pathology; Virology; Wheat Molecular Genomics; Zoology (Invertebrates)

Others: Assessor - Egyptian Accreditation Council

Appendix II: *Review of Lesson Plans by Participants*

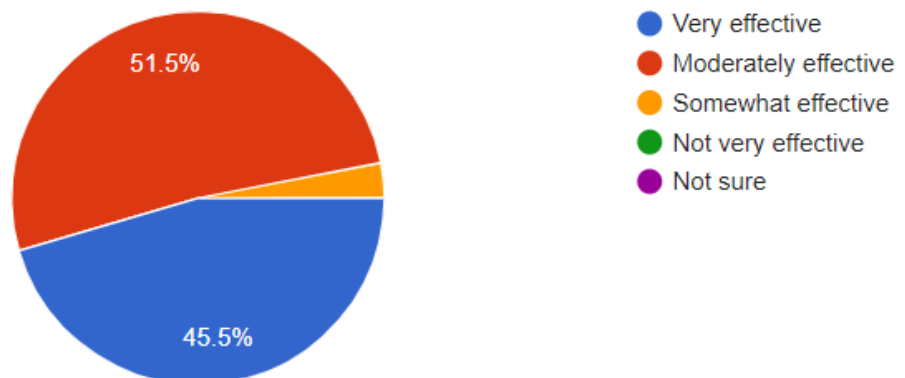
2. In your opinion, how effective is this lesson plan in explaining the topic(s) in the discipline?

34 responses



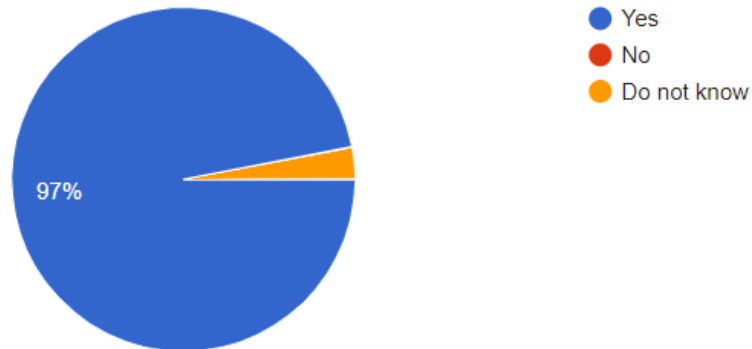
3. In your opinion, how effective is this lesson plan in integrating the discipline topic(s) with climate science?

33 responses



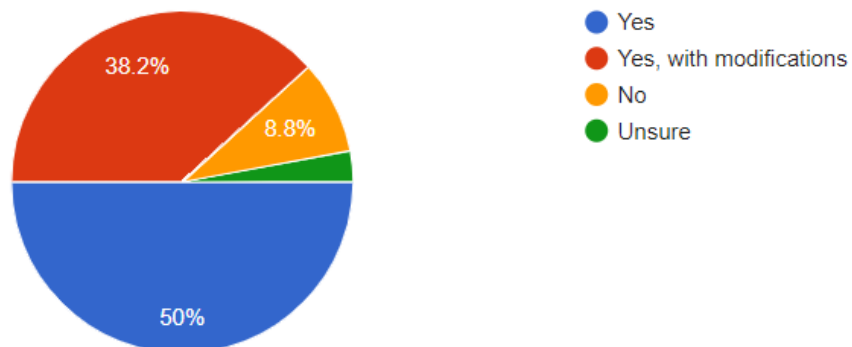
7. Do you think that your students will become more aware of climate change if you use this lesson plan in your classroom?

33 responses



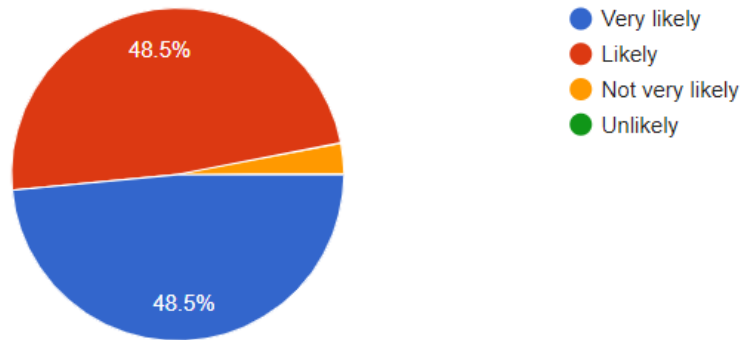
8. Would you use this lesson plan in your classroom for your students?

34 responses



10. How likely are you to develop your own lesson plan that can enhance the understanding of a core topic in your discipline using a climate-related example, activity, or case study?

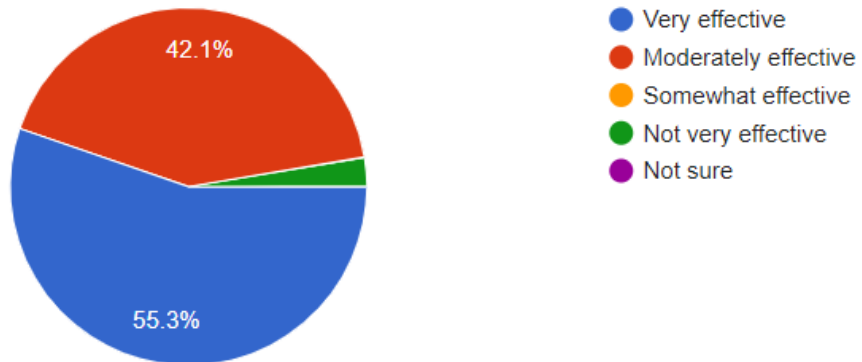
33 responses



Appendix III: *Review of Teaching Tools by Participants*

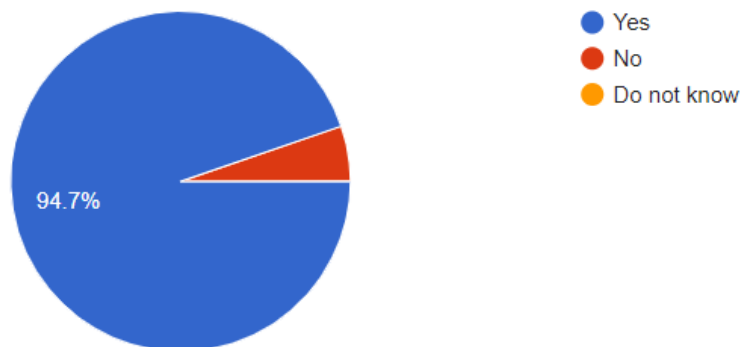
2. In your opinion, how effective is this teaching tool in explaining the topic(s) in the discipline?

38 responses



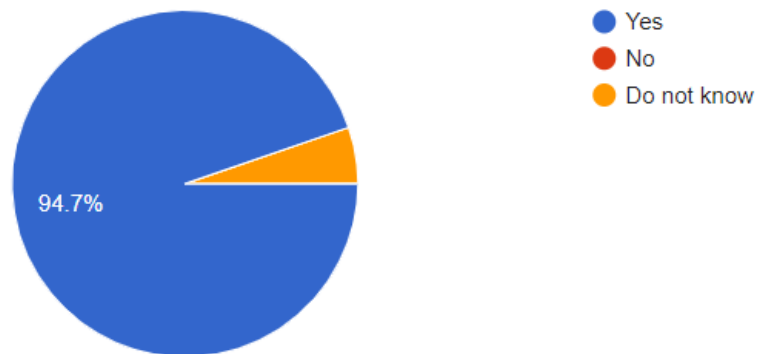
4. Does the tool description adequately show how the discipline topic can be taught using a climate-related example, activity, or case study?

38 responses



5. Do you think that your students will become more aware of climate change if you use this teaching tool in your classroom?

38 responses



6. Would you use this teaching tool in your classroom for your students?

38 responses

