



Report on the TROP ICSU Workshop for Teachers at New Delhi, India (October 2018)

Workshop Title:	Faculty Development Program cum Workshop on CLIMATE ACROSS THE CURRICULUM: RESOURCES FOR INTEGRATING CLIMATE TOPICS IN DISCIPLINE-SPECIFIC TEACHING
Date:	October 13-14, 2018
Venue:	Sri Venkateswara College (University of Delhi), New Delhi, India
Number of Facilitators from the TROP ICSU Team:	3 (TROP ICSU Implementation Team: Dr. Rahul Chopra, Anita Nagarajan, Aparna Joshi) + Prof. L.S. Shashidhara, Principal Coordinator
Number of Members from the Coordination Team:	15 (from Sri Venkateswara College, New Delhi)
Number of Participants:	Approx. 80 undergraduate-level teachers
Disciplines/Subjects Taught by Participants:	Biological Sciences, Chemistry, Physics, Mathematics, Statistics, Economics, Food and Nutrition, Environmental Studies, Electronics, Instrumentation

Summary of the Workshop

The first TROP ICSU workshop for teachers was held in collaboration with Sri Venkateswara College (University of Delhi), New Delhi, India, on October 13 and 14, 2018. 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*.



In the interactive workshop, participants attended a few plenary sessions for an [overview of the TROP ICSU project](#) and its teaching resources. Then, the teachers/educators worked in groups (in computer labs) to carry out hands-on activities using various [teaching tools](#) and [lesson plans](#) from the TROP ICSU website. They provided review comments about the teaching resources (via an online review form) to help in further enhancing the quality and effectiveness of the content. Further, participants worked in discipline-based groups to develop new lesson plan ideas to teach topics in their discipline using climate-related examples. The workshop concluded with presentations on the new lesson plan frameworks and ideas and an open discussion on continued engagement and collaboration with the TROP ICSU project.





Overall, the participants were very enthusiastic to learn about the usage of the digital teaching resources in the classroom and to integrate climate science/climate change-related topics in their existing curriculum. They were also very eager to create new lesson plans; each group created a framework for one new lesson plan for their discipline.

To summarize the feedback received on the lesson plans from the TROP ICSU website,

Explaining the topic(s) in the discipline: Approximately 72% of the participants responded 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: Approximately 82% of the participants responded 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 94% of 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**.

To summarize the feedback received on the teaching tools,

Explaining the topic(s) in the discipline: Approximately 94% of the teachers thought that the reviewed tool was very effective or moderately effective in explaining the topic(s) in the discipline.

Describing the tool: Approximately 81% of the participants thought 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 96% of the teachers 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 two-day workshop was organized as follows:

- Day 1:
Presentations by the TROP ICSU team: Introduction to the TROP ICSU project, overview of teaching resources (teaching tools/discipline, lesson plan), with examples from each discipline

Group-based activity by the participants (groups organized by disciplines): Review of discipline-specific teaching resources available on the TROP ICSU website (one lesson plan and one teaching tool per group); fill out the review form for teaching resources

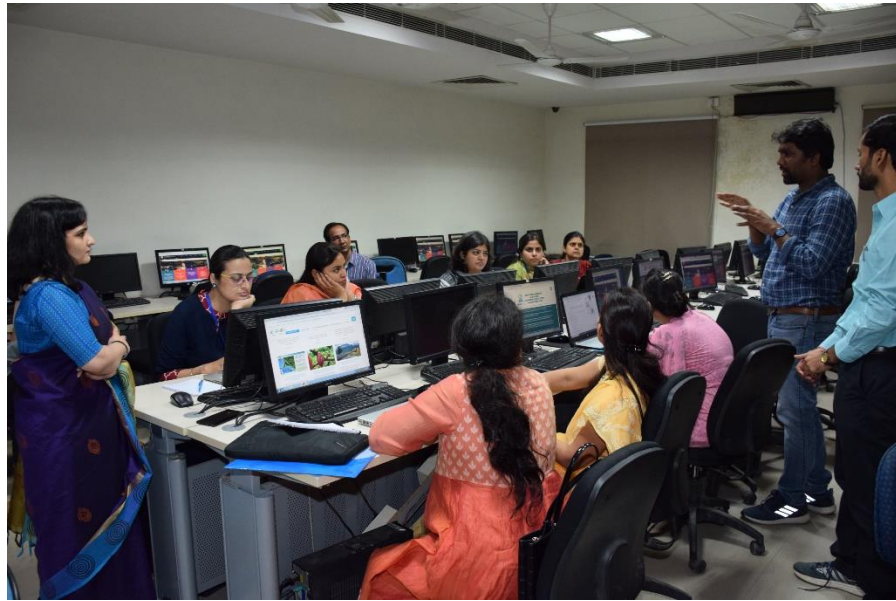


- Day 2:
Group-based activity by the participants (groups organized by disciplines): Creation of a new lesson plan

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

Presentation of a summary of the reviews provided by the participants

Open Discussions with participants: Review of the teaching resources, suggestions and feedback



Participant Feedback on Existing Teaching Resources and Suggestions to Improve the Lesson Plans

- Include questions ranging from a basic level to a high level
- Include more details (introduction and description/tool) for the topic(s) in the discipline
- For a given topic, create separate lesson plans for high school and undergraduate levels
- Some activities seem complicated
- The indicated level of the teaching tool may not be accurate (undergraduate vs high school) for the curriculum in India
- Improve accessibility by providing content in a regional language

Ideas for New Lesson Plans

Some of the new lesson plans created by the participants were on the following topics:

- Climate Change and Respiratory Health (Biological Sciences)
- Climate Change and Pollination (Biological Sciences)
- Zika and Climate Change (Biological Sciences)
- Shadow Price of Carbon for Developing and Developed Countries (Economics)
- Basic Statistical Techniques to Model Climate Science Data (Statistics)
- Effect of Population Growth on Climate Change (Mathematics)
- Heat Equation to Understand the Greenhouse Effect of the Atmosphere (Physics)

Key Takeaways and Learnings from the Workshop

- 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
- Some feedback from participants:
"Congratulations to the entire SVC TEAM and TROPICSU members for organizing the workshop. Everyone is going to be benefited."

"It was a wonderful experience. The level and diversity of discussion were outstanding. Thanks SVC and TROPICSU team."

"It was really a great and unique learning experience.... very well organized and great hospitality"

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 content based on feedback from participants
- Collaboration with enthusiastic and motivated teachers for the creation of new lesson plans

Appendix I: Disciplines/Subjects taught by the participants (undergraduate-level teachers)

Chemistry, Inorganic Chemistry, Physical Chemistry, Inorganic Chemistry, Organic Chemistry, Analytical Chemistry, Analytical Instrumentation, Environmental Chemistry, Science and Life, Green Chemistry, Computation Chemistry,

Botany, Zoology, Ecology, Microbiology and related subjects, Environmental Management, Wildlife Conservation and Management, Zoogeography, Life Sciences, Biological Sciences,

Biochemistry,

Mathematics, Statistics,

Physics,

Development Economics, Environmental Economics, Econometrics, Research Methodology,

Food & Nutrition,

Environmental Studies,

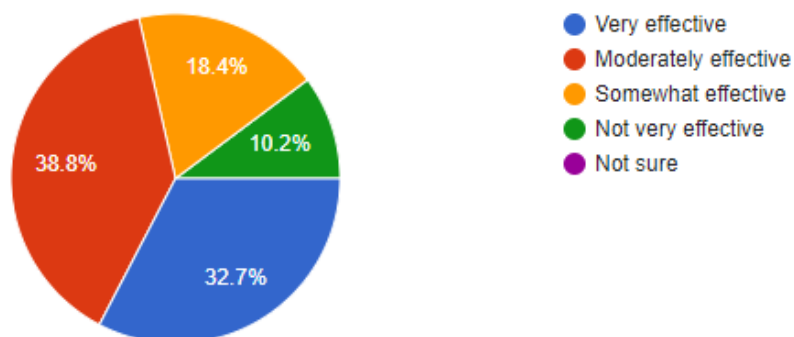
Electronics,

Instrumentation

Appendix II: Review of Lesson Plans by Participants

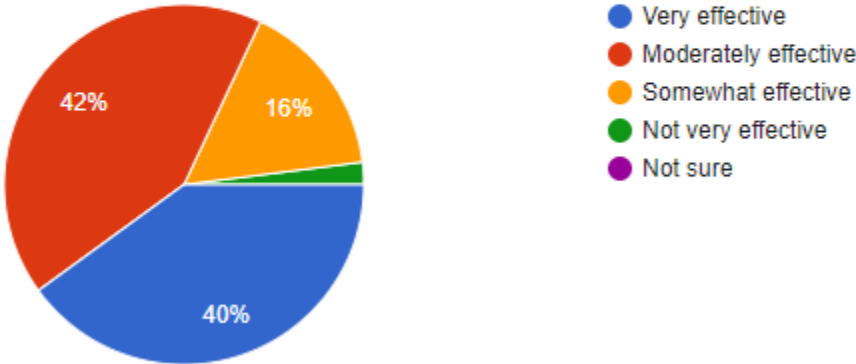
2. In your opinion, how effective is this lesson plan in explaining the topic(s) in the discipline?

49 responses



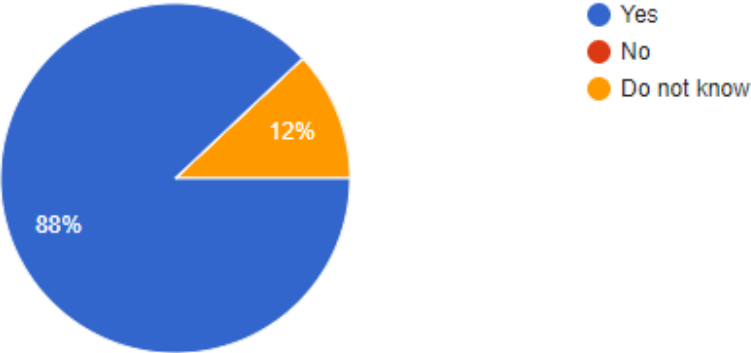
3. In your opinion, how effective is this lesson plan in integrating the discipline topic(s) with climate science?

50 responses



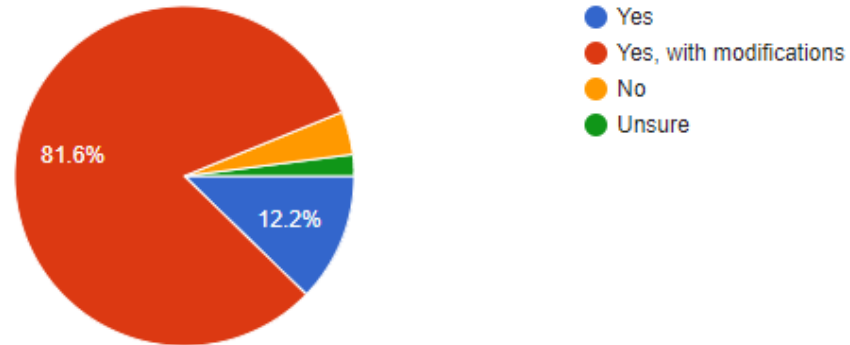
7. Do you think that your students will become more aware of climate change if you use this lesson plan in your classroom?

50 responses



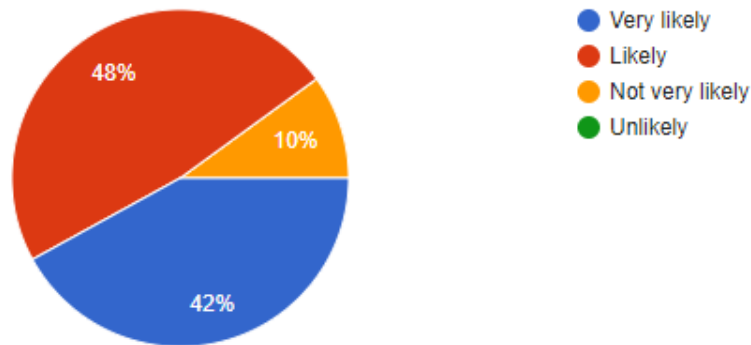
8. Would you use this lesson plan in your classroom for your students?

49 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?

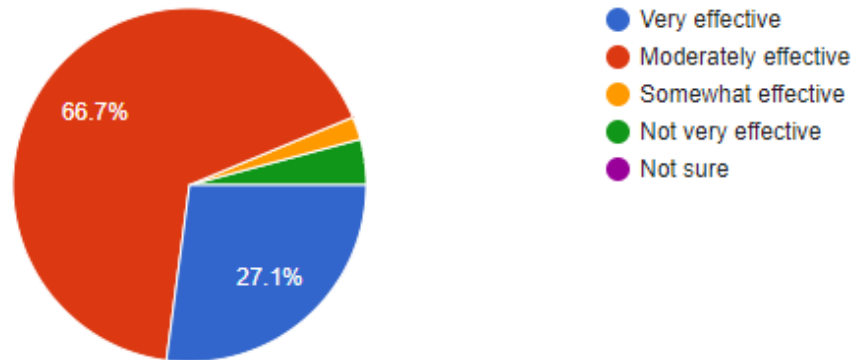
50 responses



Appendix III: Review of Teaching Tools by Participants

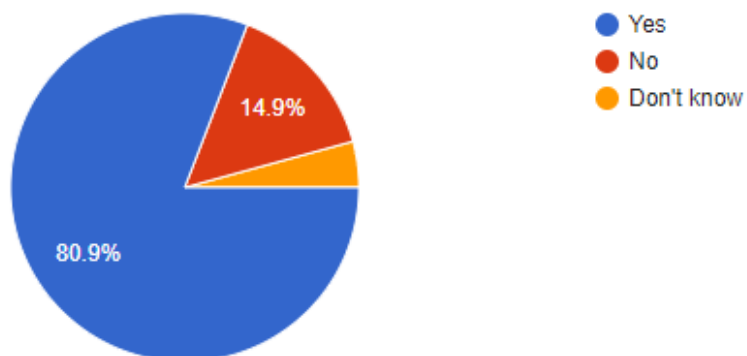
2. In your opinion, how effective is this teaching tool in explaining the topic(s) in the discipline?

48 responses



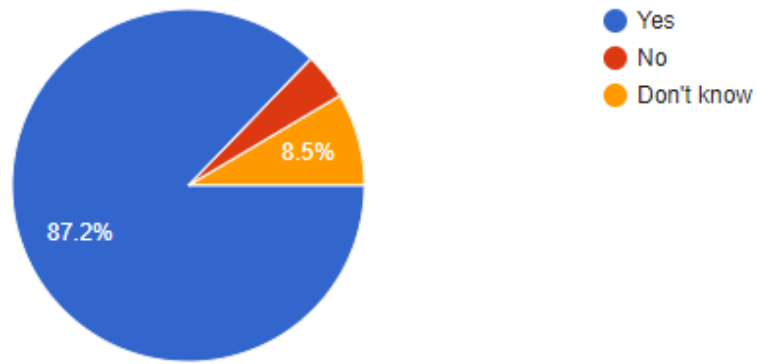
4. Does the tool description adequately show how the discipline topic can be taught using a climate-related example, activity, or case study?

47 responses



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

47 responses



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

47 responses

