

**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 Adelaide, Australia,

organized in collaboration with

The University of Adelaide, Australia

and with valuable support from

**the Government of South Australia, Botanic Gardens and State Herbarium, Adelaide and Mount
Lofty Ranges Natural Resources Management Board, and Adelaide Botanic High School
(30-31 May 2019)**

Workshop Title:	A Professional Development Workshop on TEACHING SUSTAINABILITY AS A CROSS-CURRICULUM PRIORITY: CLIMATE CHANGE RESOURCES FOR TEACHERS
Date:	May 30-31, 2019
Venue:	The University of Adelaide, Adelaide, Australia
Facilitators from the TROP ICSU Team:	Dr. Rahul Chopra, Ms. Anita Nagarajan
Speaker(s)/Facilitator(s) from the organizing partners:	Dr. Cesca McInerney, the University of Adelaide Dr. Bronte Nicholls, Adelaide Botanic High School Mr. Zafi Bachar, Natural Resources Adelaide and Mount Lofty Ranges, Department of Environment, Water and Natural Resources Dr. Stefan Caddy-Retalic, Botanic Gardens and State Herbarium of South Australia Mr. Julian Marchant, Adelaide and Mount Lofty Ranges Natural Resources Management Board
Team of Coordinators:	Dr. Cesca McInerney, Ms. Katarina Krizova
Number of Participants:	42
Disciplines/Subjects Taught by Participants:	Chemistry; Civics; Digital Literacy; Earth Sciences; Education; English; Geography; Geology; HASS (Humanities and Social Sciences); Health; History; Law; Mathematics; Philosophy; Physics; Psychology; Science

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 **one-and-a-half-day workshop for teachers at the high school and university level** was conducted in collaboration with the University of Adelaide at Adelaide, Australia, on May 30 and 31, 2019. The event was also supported by the Government of South Australia, Botanic Gardens and State Herbarium, Adelaide and Mount Lofty Ranges Natural Resources Management Board, and Adelaide Botanic High School. The workshop was attended by 42 participants, including lecturers, teachers, and researchers affiliated to various universities and schools in Adelaide, and having experience and expertise in various disciplines.

TROP ICSU is grateful for the tremendous support and help from the University of Adelaide 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 sustainability-related topics in the Sciences, Mathematics, Social Sciences, and Humanities by 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*.



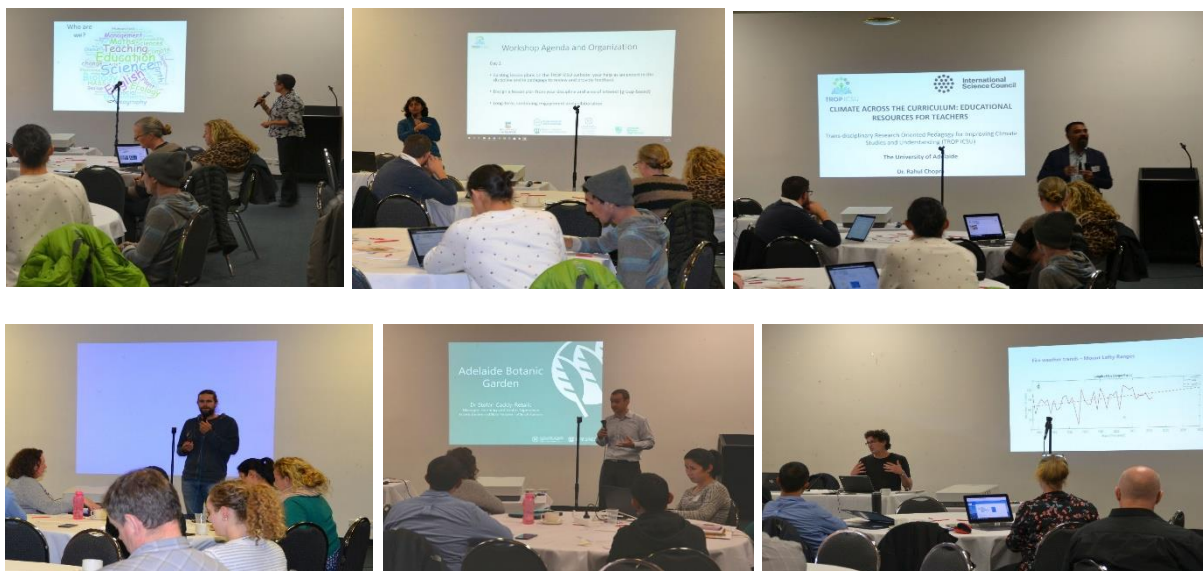
Group Photo: Workshop for University Lecturers and School Teachers, Adelaide, Australia

Participants were assigned a pre-workshop homework activity of identifying one lesson plan and one teaching tool relevant to their teaching or interests, and mapping the corresponding topics to the curriculum they teach. These would be useful during the group activities and discussions at the workshop.

The workshop commenced with welcome remarks from Dr. Cesca McInerney, University of Adelaide. Next, the TROP ICSU team provided an [overview of the TROP ICSU project](#) and its teaching resources. Then, 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.

This workshop included some special events and presentations. On the evening of the first day, participants were taken on a *guided tour of the Adelaide Botanic High School* by Dr. Bronte Nicholls (Assistant Principal, Curriculum Innovation and Community Partnerships, Adelaide Botanic High School) to learn about and witness first-hand the unique learning environment envisioned and provided by this new school in Adelaide. The second day of the workshop began with a talk on “*Tools to inform Adelaide’s adaptation choices*” by Zafi Bachar (Climate Applications Coordinator, Natural Resources Adelaide & Mt Lofty Ranges, Department of Environment, Water and Natural Resources). The event concluded with presentations on “*Overview of SA government education resources*” by Dr. Stefan Caddy-Retalic (Manager, Learning and Visitor Experience, Botanic Gardens and State Herbarium of South Australia) and Julian Marchant (NRM Education Officer, Adelaide and Mount Lofty Ranges Natural Resources Management Board). These talks were intended to provide region-specific (South Australia) context and information about educational resources that would be useful for teachers.



Plenary Sessions at the Workshop for Teachers, Adelaide, Australia



Plenary Sessions at the Workshop for Teachers, Adelaide, Australia

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 Australia. 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, Adelaide, Australia



Group Activity at the Workshop for Teachers, Adelaide, Australia

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

Explaining the topic(s) in the discipline: **100%** of the responses from the university lecturers and **approximately 67%** of the responses from the high school teachers 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: **100%** of the responses from the university lecturers and **approximately 75%** of the responses from the high school teachers 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: **100%** of the responses from the university lecturers and **100%** of the responses from the high school teachers 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 A: Review of Lesson Plans by Participants \(University Lecturers\)](#) and [Appendix II B: Review of Lesson Plans by Participants \(High School Teachers\)](#).

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

Explaining the topic(s) in the discipline: **Approximately 67%** of the respondents among the university lecturers and **approximately 64%** of the respondents among the high school teachers thought that the reviewed tool was **very effective or moderately effective** in explaining the topic(s) in the discipline.

Describing the tool: 100% of the responses from the university lecturers and **approximately 55%** of the responses from the high school teachers 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: 100% of the respondents among the university lecturers and **approximately 73%** of the respondents among the high school 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 A: Review of Teaching Tools by Participants \(University Lecturers\)](#) and [Appendix III B: Review of Teaching Tools by Participants \(High School Teachers\)](#).

Details of the Workshop

Agenda and Overall Organization

The agenda of the one-and-a-half-day workshop was as follows:

- **Day 1 (afternoon and evening):**

- Workshop welcome:

- Welcome remarks by Dr. Cesca McNerney, the University of Adelaide

- 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 teaching tool per group); providing feedback on teaching tools through online review forms

- Tour of Adelaide Botanic High School



Group Activity at the Workshop for Teachers, Adelaide, Australia

○ **Day 2:**

Opening remarks and setting goals for the day

Presentation by Zafi Bachar (Climate Applications Coordinator, Natural Resources Adelaide and Mt Lofty Ranges): Tools to inform Adelaide's adaption choices

Introduction to the components of a lesson plan

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 per group); providing feedback on lesson plans through online review forms

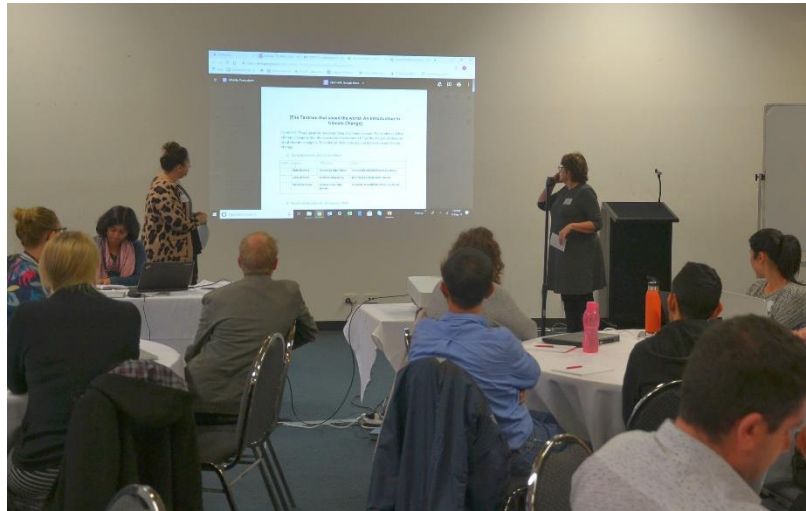
Group-based activity by the participants (groups organized by discipline): Creation of a new lesson plan based on an idea that integrates a climate topic with their regular teaching

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

Overview of SA government education resources: Presentations by Dr. Stefan Caddy-Retalic (Manager, Learning and Visitor Experience, Botanic Gardens and State Herbarium of South Australia) and Julian Marchant (NRM Education Officer, Adelaide and Mount Lofty Ranges Natural Resources Management Board)

Closing remarks



Lesson Plan Presentation at the Workshop for Teachers, Adelaide, Australia



Lesson Plan Presentation at the Workshop for Teachers, Cairo, Egypt

Participant Feedback and Suggestions on Existing Teaching Resources

- Provide more recent learning material
- Include a part on prior knowledge at the start of the lesson plans
- Reading material is considerably long and may not be suitable for high school students; consider replacing with shorter reading material or shorter videos
- Add country-level filters to case studies

Ideas for New Lesson Plans

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

- Ice Age Time Machine (Earth Sciences)
- Using Literature (*Anchor Point*) for Exploring Climate Change in Australia (English)
- Long-term Impacts of the Industrial Revolution (History)
- International Treaties and Australia's Obligations to International Law (through examples such as the Paris Agreement and the Kyoto Protocol) (Social Sciences)
- Greenwashing (Communication, Advertising)

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 sustainability (specifically, 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 through networking and linking climate change to all areas of education.
- Participants sought contextually relevant examples (Australia) for their teaching; some of the lesson plan ideas generated during the workshop incorporated such examples.
- Teachers recommended the mapping of teaching resource content to country-level (Australia) curriculum standards.
- Some participants suggested further modifications/customizations to make the teaching resources more useful at the high school level.
- Some feedback from participants:

"This video is too long- we need videos that are approx 5 mins, up to 8 minutes otherwise students tune out!"

"Fantastic opportunity to network and share ideas around climate change. Very

inspiring. Thank you!"

"This resource needs specific core teaching before it can be used. It's a good resource, but only one small aspect of a wider teaching unit"

"If possible, please add filters to the case studies (by country) so we can select local relevant examples for our students."

"This workshop has been very useful in collaborating with other staff to find the links with climate change to all areas of education."

"Thank you for sharing such an amazing set of educational tools specifically on sustainability."

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 (Australia) case studies, activities, and resources by using the ideas generated during the workshop

Appendix I: *Disciplines/Subjects Taught by the Participants*

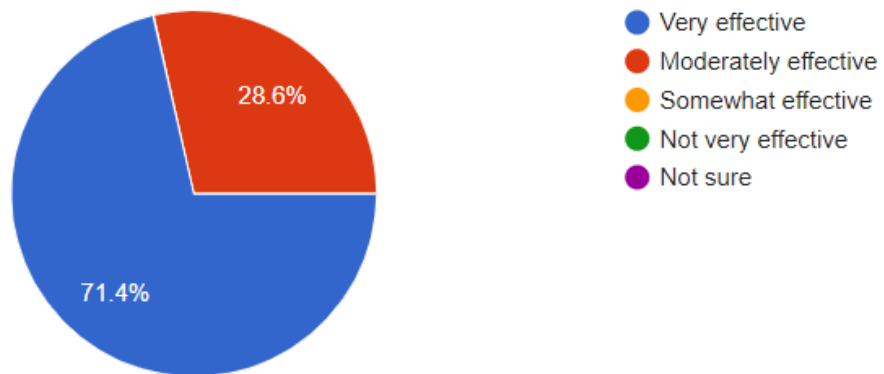
Chemistry; Civics; Conservation and Land Management; Digital Literacy; Earth and Environmental Science; Earth Sciences; Education; English; Geography; Geology; HASS (Humanities and Social Sciences); Health; History; Humanities; Japanese; Language; Law; Mathematics; Media Studies; Philosophy; Physics; Psychology; Renewable Energy; Science; Social Sciences; Social Studies

Others: NRM Education Officer; PhD Candidates and Post-doctoral Researchers in various fields such as Earth Sciences, Biology, and Urban Planning

Appendix II A: *Review of Lesson Plans by Participants (University Lecturers)*

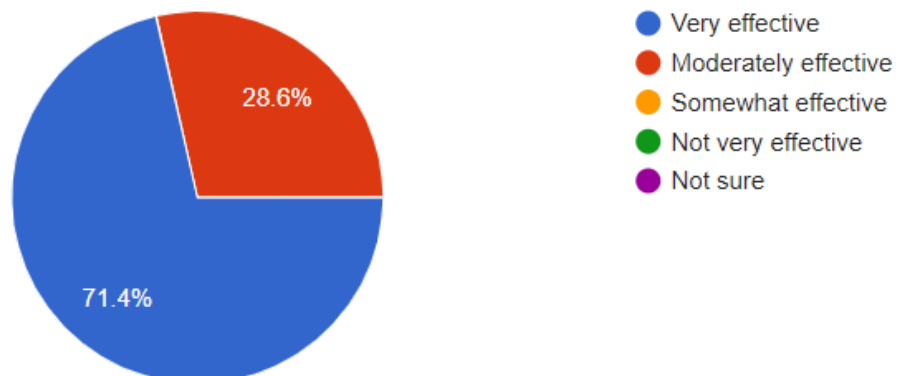
2. In your opinion, how effective is this lesson plan in explaining the topic(s) in the discipline?

7 responses



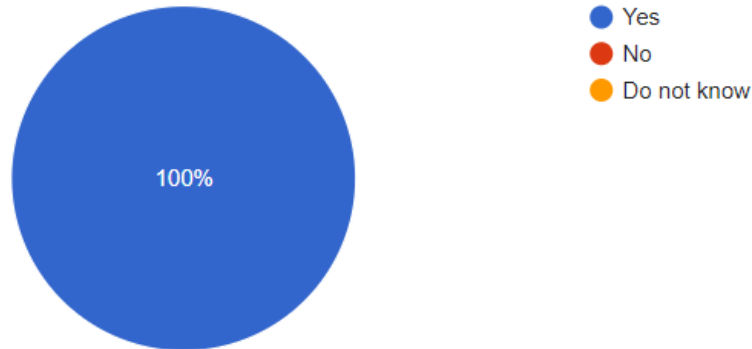
3. In your opinion, how effective is this lesson plan in integrating the discipline topic(s) with climate science?

7 responses



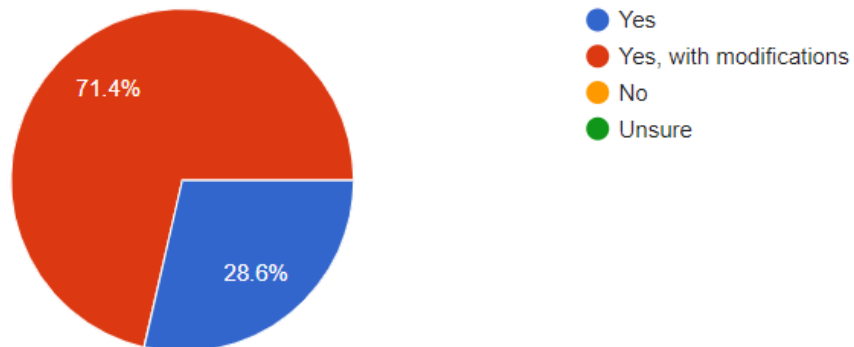
7. Do you think that your students will become more aware of climate change if you use this lesson plan in your classroom?

7 responses



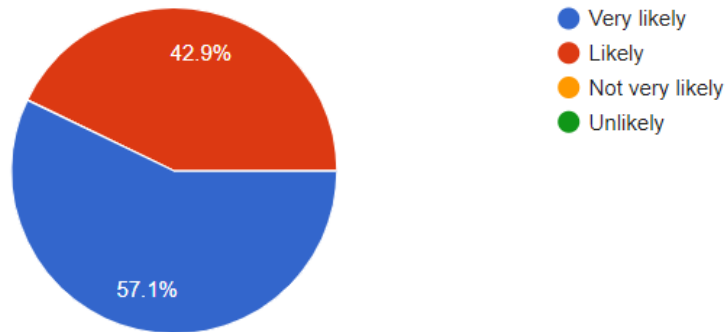
8. Would you use this lesson plan in your classroom for your students?

7 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?

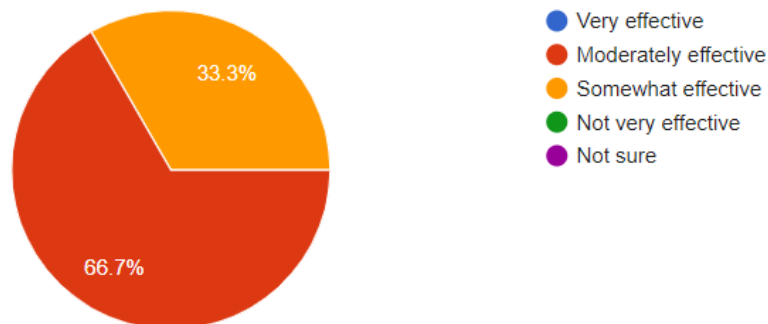
7 responses



Appendix II B: Review of Lesson Plans by Participants (High School Teachers)

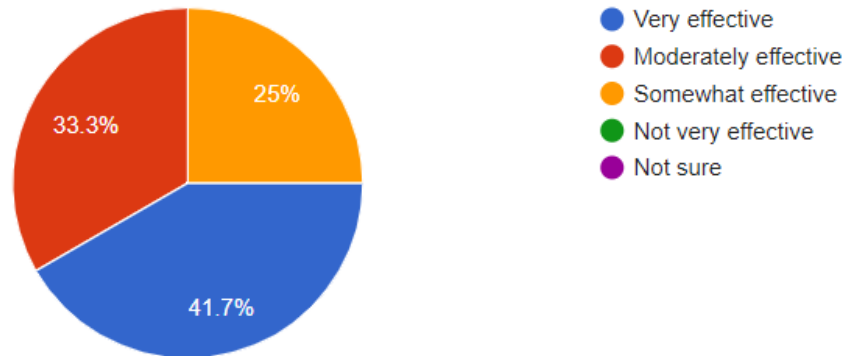
2. In your opinion, how effective is this lesson plan in explaining the topic(s) in the discipline?

12 responses



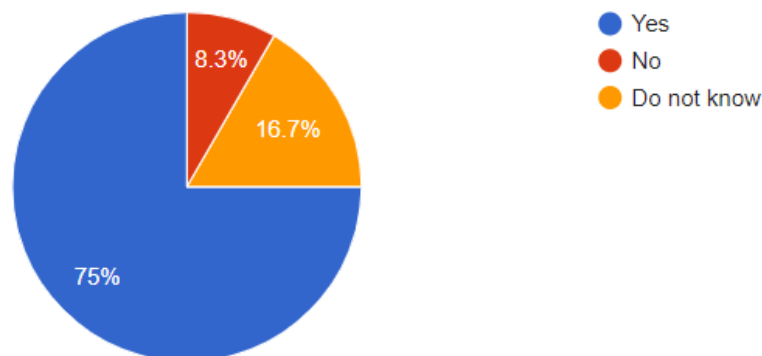
3. In your opinion, how effective is this lesson plan in integrating the discipline topic(s) with climate science?

12 responses



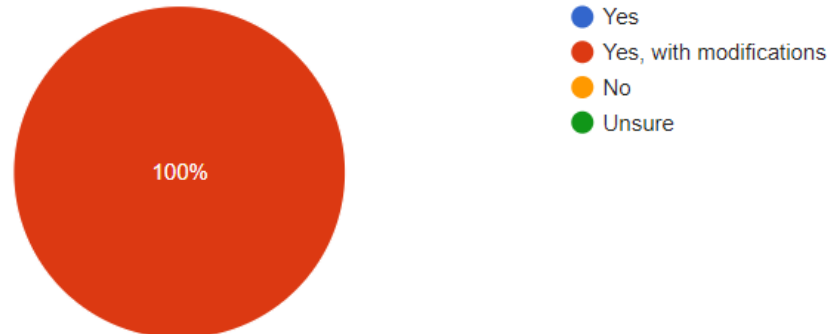
7. Do you think that your students will become more aware of climate change if you use this lesson plan in your classroom?

12 responses



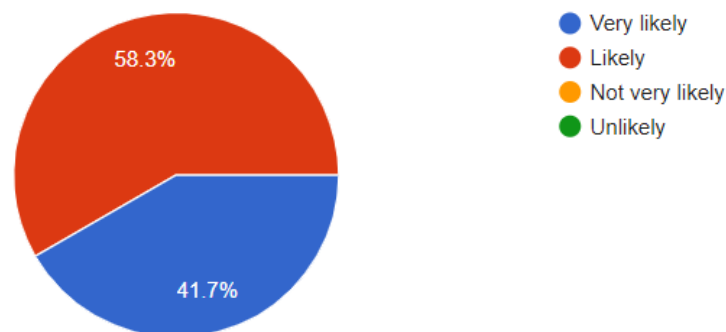
8. Would you use this lesson plan in your classroom for your students?

12 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?

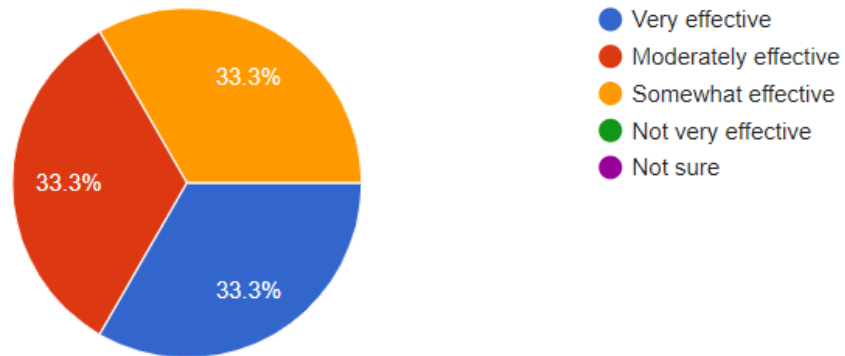
12 responses



Appendix III A: *Review of Teaching Tools by Participants (University Lecturers)*

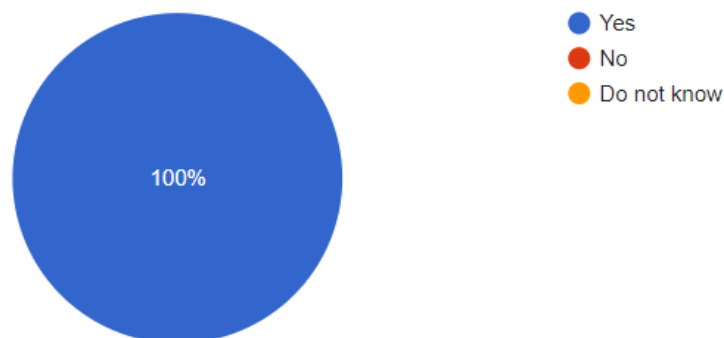
2. In your opinion, how effective is this teaching tool in explaining the topic(s) in the discipline?

3 responses



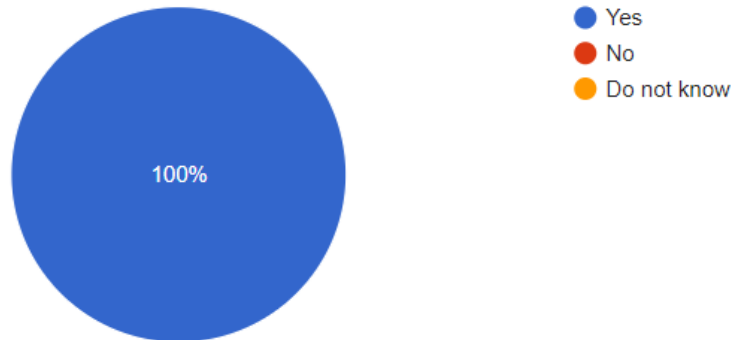
4. Does the tool description adequately show how the discipline topic can be taught using a climate-related example, activity, or case study?

3 responses



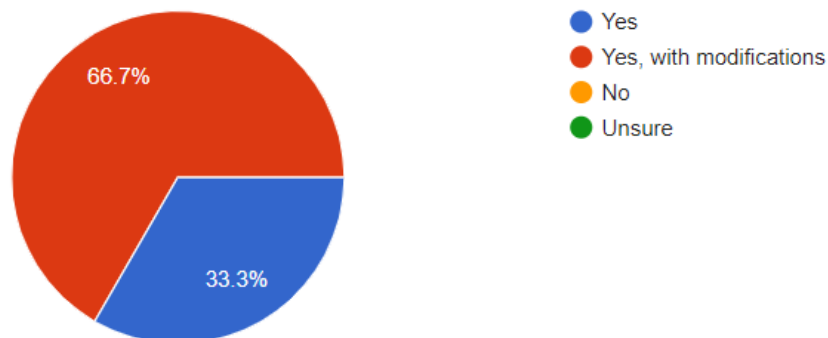
5. Do you think that your students will become more aware of climate change if you use this teaching tool in your classroom?

3 responses



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

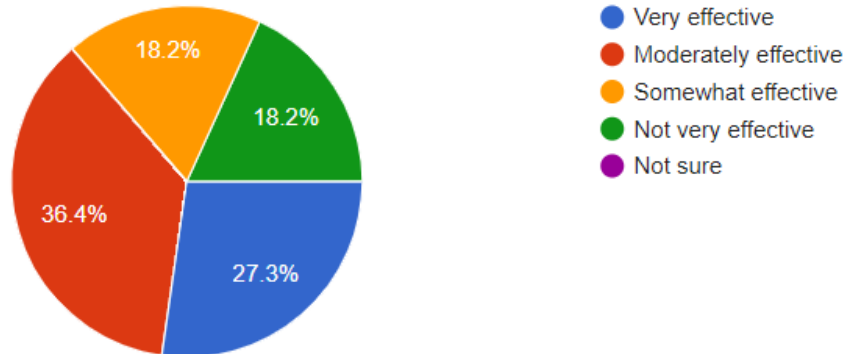
3 responses



Appendix III B: *Review of Teaching Tools by Participants (High School Teachers)*

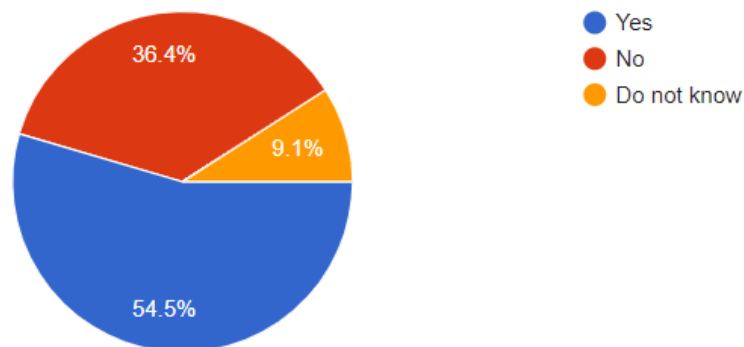
2. In your opinion, how effective is this teaching tool in explaining the topic(s) in the discipline?

11 responses



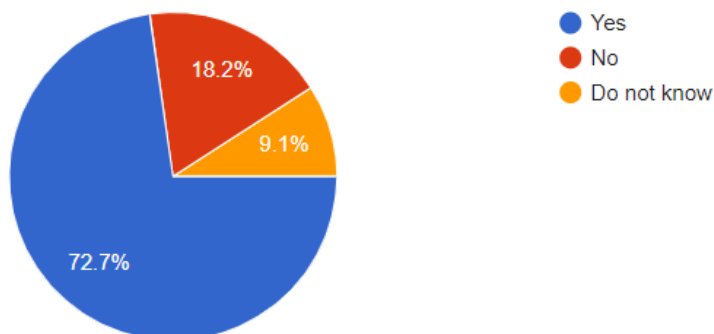
4. Does the tool description adequately show how the discipline topic can be taught using a climate-related example, activity, or case study?

11 responses



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

11 responses



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

11 responses

