FINAL REPORT

FOREST COMMUNITY YOUTH AND CLIMATE CHANGE ADAPTATION: AN MTS PAKIS EXPERIENCE

2022-2023 Case Studies Cohort
Indonesia

This research was conducted by

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Education and Community Challenges at Madrasah Tsanawiyah (MTs) PAKIS, Indonesia | Indonesia Case Study

Summary

Madrasah Tsanawiyah (MTs) PAKIS is located in Pesawahan Hamlet, Gununglurah Village, on hilly with steep slopes of 400-900 meters above sea level, has high rainfall of up to 3000mm annually, and is upstream of several river basins. The community is an agrarian where most households work in the agricultural sector. The students of MTs PAKIS are the northernmost community group from Sambirata Village and Gununglurah Village, directly adjacent to the forest. Due to remoteness and no access to schools, many school-age children cannot afford an education. As a result, many school-age children are forced to work in the farm fields or are trapped in early marriages, continuing the cycle of poverty. Several environmental activists initiated a madrasa in collaboration with the Pesawahan Hamlet community in 2011 to enable children to access quality formal education through distance classes in partnership with existing formal madrasa in the district. So far, the madrasa has graduated nine batches of junior high school students. The educational philosophy is reflected in the school's acronym: PAKIS as Piety, Achievement, Knowledge, Integrity, and Sincerity.

The objective of the MECCE program at MTs PAKIS is to identify how concepts and theories about environmental education, one of which is about climate change, have been applied by MTs PAKIS? In addition, the MECCE program activities at MTs PAKIS also aim to evaluate and assess the maps of environmental education and climate change activities that are being applied so that they are more meaningful and become a reference for planning future climate change education designs.

The research method used is participant observation and in-depth interviews. In observation or observation, the researchers are directly involved with the community groups that will be studied. In this case, the team members who are also managers of MTs PAKIS are teaching volunteers who provide education to students every day. Apart from that, other team members also provided educational materials on climate change. In-depth interviews were conducted with students, school administrators and parents. Those involved as objects of observation in this study were all MTs PAKIS students a total of 21 people consisting of 14 boys and seven girls. It consists of eight students in Class VII, seven students in Class VIII and six students in Class IX. Seven students were interviewed consisting of five girls and two boys. The parents of students interviewed were two females, three school managers interviewed consisting of one founder who was also a team member, and two students (male and female) pursuing Package C (equivalent to high school) who teach for MTs students.

The research and program results are that school-age children can continue their studies without spending money on education or transportation because they are still in the same environment. In addition to formal education, children also receive knowledge that is appropriate to their local needs as a community on the edge of the forest. They learn about agriculture, agroforestry, animal husbandry, biodiversity and climate change. By continuing their education, they have been able to keep these children living in the village, instead of migrating to the city, and allow them to study and work in the village and preventing them from getting married at a very young age. The knowledge and education at MTs PAKIS can answer and prepare children with more skills, knowledge and self-confidence to meet the economic needs of their families in the future. Their understanding of climate change is obtained from field practice and theoretical knowledge so that now they can understand and explain why seasonal changes are detrimental to family-production crops such as cardamom.

The sustainability of PAKIS MTs must be supported because there has been a positive change in perceptions in the community where they believe that education will make better changes in life. The community has high expectations that children can continue to go to school. However, the volunteerism of the teaching staff is one of the challenging obstacles because the teaching staff has not been permanent for the children of MTs PAKIS.
Managerial systems that are built must be able to answer the weaknesses of the human resources of volunteer-based teaching staff.

Report

The CCE Initiative

The main audience for this program is students and school administrators of MTs PAKIS. Meanwhile, there are three variables in the case study of the MECCE program in Indonesia: program performance, educational effectiveness, and problem identification. Climate change education program performance assessment uses the parameters set out in the Action guidelines for climate empowerment (UNESCO and UNFCCC 2016), including education, training, public awareness, public access to information, public participation, and international cooperation. In the second variable, the assessment of the effectiveness of teaching climate change uses the guidelines given to educators. The approach taken uses a modification of the NAAEE Excellent Professional Development Guidelines for Environmental Educators (2019): 1. Literacy on climate change; 2. Basic understanding of climate change education; 3. Taking responsibility for climate change; 4. Planning and implementing climate change education; 5. Development of inclusive learning; and 6. Assessment and Evaluation. While the third variable is about the challenges and obstacles faced by a systematic review to obtain representative data.

The fundamental change that was obtained from the CCE initiative at MTs PAKIS was that school-age children can continue their schooling without spending money on education or transportation because they were still in the same environment, even though the distance is still relatively far, about an hour's drive with ups and downs hill terrain. In addition to formal education, children also receive knowledge that is appropriate to their local needs as a community on the edge of the forest. They learn about agriculture, agroforestry, animal husbandry, biodiversity and climate change. Education has been able to keep children living in the village. Instead of migrating to the city, the students study and work in the village and preventing them from getting married at a very young age. The knowledge and education obtained at MTs PAKIS have answered and prepared children to have more skills, knowledge and self-confidence to meet the economic needs of their families in the future. Their understanding of climate change is obtained from field practice and theoretical knowledge to understand and explain why seasonal changes detriment the family production economic crops such as cardamom.

The sustainability of PAKIS has been achieved by a positive change in the community perceptions where they believe that education will make changes for a better life. The community eagerly allow their children to continue to go to school. However, the volunteerism of the teaching staff is one of the challenging obstacles to sustainability because the teaching staff is not permanent. Managerial systems must be able to answer the weaknesses of the human resources of volunteer-based teaching staff.

The Case Study

The objective of the MECCE program at MTs PAKIS is to identify how concepts and theories about climate change and environmental education have been applied by MTs PAKIS. So far, MTs PAKIS has built a greenhouse model, cultivated food crops, enriched useful plant species around schools, agroforestry activities, education on climate change mitigation, utilisation of biodiversity, and an inventory of forest plants. Apart from that, the activities of the CCE

MECCE at MTs PAKIS also aim to evaluate and assess the maps of environmental education and climate change activities that are being applied to become a reference for planning future climate change education designs.

National Research and Innovation Agency of The Republic of Indonesia is the orgnization, who conducted the case study.

Case study methods and participants

The research method used is a participant-observation and in-depth interviews. In the observation, researchers interact directly with the community groups to be studied. The research targets are MTs PAKIS students, MTs PAKIS administrators who are volunteers who provide education to students every day, and parents of MTs PAKIS students.

Those involved as objects of observation in this study were all MTs PAKIS students, a total of 21 persons consisting of 14 boys and seven girls. It consists of eight students in Class VII, seven students in Class VIII and six students in Class IX. Meanwhile, seven students were interviewed in-depth, consisting of five girls and two boys. The parents of students interviewed were two females of two students, three school administrators: one founder, and two teachers who were former students of MTs PAKIS, male and female (currently serving as students in education packages equivalent to high school) which assist the learning process for MTs students. A 29- year-old female teacher, responsible for administration at MTs PAKIS as well as a non permanent teacher for early childhood education (PAUD). Meanwhile, the 22-year-old male teacher is an alumnus of the first Batch of MTs PAKIS who is currently teaching at MTs PAKIS as the person in charge related to plants, especially coffee, maintenance, harvesting, processing and marketing. All informants who were observed and interviewed domicile on the edge of the forest whose livelihoods depended on the forest on the slopes of Slamet Volcano.

Guided questions for interviews in this study are intended for two targets: students and school administrators. The research questions asked in the in-depth interview process are:

For Students:

Student's Information.

A. Educational history.

1. Since when did you study at PAKIS?
2. Why did you choose a school in PAKIS?
3. What is the student's last education? Where?
4. What other activities do students do besides PAKIS?
5. Are students involved in household economic activities? Example?
6. What do you favour about studying at PAKIS?
7. What is your goal of studying at PAKIS and where do you want to go to school after finishing school?

Effectiveness from School Learners (NAAEE 2019).

B. Synthesis, analysis, and interpretation.

1. What do students know about climate change?
2. What do students know about the characteristics of climate change?
3. How do students explain that climate change is in their environment?

4. Did the students like the material/discourse on climate change? 5. What do students favour about climate change discourse/material?

C. Knowledge of processes and systems relating to climate change.

1. Do students know how climate change occurs?

2. Can students relate climate change (global) to phenomena occurring in their (local) environment? Invite and help students to explain.

3. Invite students to give simple examples of what they can do to slow climate change.

D. Ability to understand and solve problems.

1. Invite students to imagine with story examples and present the simplest problems in the local area related to climate change. Then, ask the question “What would they like to do to help with the problem”.

2. Why did they choose to help in this way?

3. At this time have they tried to help, as PAKIS students?

4. Are there other goals and hopes that are bigger than the solutions/assistance that they are currently doing?

5. Are they willing or able to invite more people from the community to help??

E. National and personal responsibilities related to climate change

1. Do students know that there is personal responsibility, community groups as well as the state regarding climate change? If not explain.

2. Give a prologue, do students think that they have personal responsibility as individuals related to climate change?

3. Do students know the responsibility of the state in climate change? If so, try to state what they think.

For School Administrators:

Existing problems.

A. Challenges.

1. How is MTs PAKIS currently being managed?

2. What do you feel is the most hindering the development of MTs PAKIS at the moment and has been an obstacle in the past?

3. How was Mts Pakis founded?

4. Are the obstacles that existed since the beginning still exist today? 5. How do you see or respond to these obstacles? Complicated? Or encourage?

B. Existing obstacles.

1. In detail, can you state as completely as possible what these obstacles are?

2. Have you discussed these obstacles with other people? School manager? With students? Anyone?

3. Did you arrange these obstacles in detail and give them priority for completion?

C. Mitigation.

1. So far, who has been involved in the management of MTs PAKIS and have you provided information about the obstacles and challenges you have faced?

2. Are there efforts to find joint solutions to the various problems and challenges faced by PAKIS institutions? Who is involved?

3. Is there a joint plan drawn up to resolve obstacles? Or to achieve a goal? 4. With whom has this attempt been made? Does it work?

5. Were there discussions with PAKIS administrators (internal) and external parties (parents, community, other parties) about PAKIS's plan to address challenges and resolve obstacles?

6. Is there a division of roles, a list of resources, a joint plan with the various parties involved or working with MTS PAKIS?

7. Are goals jointly formulated to resolve obstacles, address challenges and achieve goals?

Educational effectiveness.

A. Performance measurement (UNFCC 2016)

1. How is the educational design of MTs PAKIS so that it can convey knowledge about climate change to students?

2. Did the education given to MTs PAKIS provide knowledge about climate change from the start?

3. Is there any special material prepared for this? or is it integrated into the school material/curriculum?

4. Currently, are there any difficulties in conveying education about climate change in teaching and learning activities?

5. Which of the PAKIS managers are very knowledgeable about climate change discourse, and can integrate it into teaching and learning activities?

6. How does PAKIS make the wide-ranging discourse on climate change easy to introduce and teach its students?

7. What do PAKIS consider valuable experiences in integrating climate change discourse into teaching and learning activities?

8. How is the acceptance of students (all levels) about climate change so far?

9. Does PAKIS see that climate change knowledge is important to introduce to students?

10. How does it benefit current students? In the long term what to expect?

11. Is there a way that is often used by PAKIS or often done (preferred) to transfer climate change discourse to students? How? Is it uniform across all classes and age ranges?

12. If there is a method that is considered the most appropriate, explain it to us, it will be a good lesson (best practice) for many parties.

13. Is there some kind of class material-giving session? Is there also some sort of outdoor activity? Practice? Play or training sessions and skills related to climate change materials and discourse?

14. If yes, state any training, activities and PAKIS school initiations that are not related to classroom learning but bring climate change material.

15. How does PAKIS always update its knowledge and discourse on climate change?

16. Is it easy or difficult for PAKIS to get information about climate change?

17. Are there outside parties involved in learning about climate change and also during non-class activities? Who are they?

18. Has PAKIS received the attention or received appreciation from the community (village/district/regency) for the education and integration work on climate change that has been carried out so far? What form of external appreciation?

19. Does PAKIS cooperate with these external parties? Anyone? And what shape? 20. Has there been any cooperation with foreign parties? If yes, what form?

B. Teaching effectiveness (NAEE 2019).

1. Reiterate how PAKIS obtains information related to climate change. How often is climate change information updated? Any schedules or assignments?

2. Is the knowledge (literacy) about climate change in the PAKIS institution or the person responsible for it considered sufficient? If not, how do you deal with it?

3. So far, has PAKIS collected knowledge or methods of collecting this knowledge? How to? What are the forms? Is it accessible to everyone?

4. Who frequently accesses climate change information at this time? Student? Manager?

5. According to PAKIS, where does PAKIS play a role in this grand scheme of climate change?

6. Does PAKIS feel that it has a responsibility or obligation to play a role in devising and slowing down climate change?

7. In what areas can PAKIS play a role?

8. How is the plan drawn up in this regard?

9. How is the implementation, realisation, and implementation? Especially its realisation in the world of education.

10. Does PAKIS apply the principle of being open, and inclusive in learning activities? Can outsiders be involved in climate change education at PAKIS?

11. Is there a way to evaluate or assess the work that has been done by PAKIS? Be it in education, in collaboration and integration of climate change discourse and action?

12. If so, how was the evaluation tool implemented and who was involved?

Advancing Quality CCE through this Case Study (findings)

MTs PAKIS tries together with the community to find solutions to the difficulties of families who have problems with access to schools (remoteness and high costs) and environmental problems in the area. The founders who initiated the establishment of MTs PAKIS were environmental activists, educational activists and bird observers and conservationists. They found that many school dropouts were located in the Sambirata and Gununglurah Village areas which are adjacent to the state forest area. Besides having far flung access to secondary school facilities, these dropout children also have an economic role for their families. Livelihood strategies in agriculture and plantations require labour, at this low level of family income, it is very unlikely to employ workers from outside the family. From these

conditions, the form of education for school children that is designed also seeks to answer the needs of the students' families, not to be deprived of their daily environmental conditions and socio-economic systems. Livelihoods based on agriculture, plantations and processing of natural resources are integrated into the designed education system. In addition, there is a strengthening of conservation values to maintain the preservation and continuity of the carrying capacity of natural resources. This is integrated into the cognitive aspects of everyday learning. Cognitive aspects that are structured together with the primary and secondary education systems built by MTs PAKIS are also combined with socio ecological aspects of their identity as a community of peasants.

The daily learning and teaching activities use a spatial material delivery model as well as action-based learning. What is often done is to combine classroom and out-of-class models with observations, discussing joint findings and taking action. This aspect of learning and action can be exemplified in the activities of exploring the surrounding environment, observing birds, and documenting and identifying birds. Learning activities in this way also include identifying and protecting bird habitats as well as planting various types of plants and trees. This activity is very useful for maintaining the density of hilly vegetation cover at altitude and improving the habitat for birds and other animals. The various plants and trees planted also have economic value such as coffee. From this coffee plant, a local coffee commodity is planned and started to be pioneered, which can become a new additional income for the community as well as PAKIS MTs students. In the long term, it is also expected that coffee plants can help the sustainability of school institutions where students' study.

The typical MTs PAKIS learning, action and work activities also attracted the attention of many volunteers to come and give each role according to their abilities. This activity was also directed by the managers of MTs PAKIS who facilitated volunteers to play a role in the learning process. These volunteers come from various backgrounds and are a way of enriching students' knowledge with a variety of new knowledge. These volunteers are also often called study volunteers or educator volunteers as partners for students. These volunteers also assist students in understanding learning material, just like teachers. In their daily lives, these volunteer educators also try to make adjustments to the spirit of MTs PAKIS which aims to organize a teaching and learning process based on local knowledge and wisdom. Most of these volunteers are students from various universities with various scientific backgrounds, activists and researchers who are eager to participate in helping MTs PAKIS educational institutions.

Especially for climate change material, MTs PAKIS introduces students to what is meant by the phenomenon of climate change, and then its relevance to where they live. Students who live in the forest and rural are invited to discuss how climate change is causing their villages and their environment to gradually change. In basic education, climate change material is often given in outdoor discussion activities, in forest exploring sessions, as well as in activities related to agriculture and household waste treatment. Often, MTs PAKIS students also try to introduce activities, areas and the wealth of their living environment with various creative things including writing, painting and social media. For an institution and basic education entity that is managed independently, this is a breakthrough.

These creative things are in the form of writing short stories, posters and documentation of various species of birds in photos and narrations that are collected while they study and explore the environment in which they live. Currently, in the scheme supported by MECCE, three activities are being and have been carried out:

First, the poster-making contest about climate change has been done. As a result, 19 posters were telling various themes about the environment and climate change.

Secondly, MTs PAKIS and students are making a short film that talks about their activities, their school, the environment where they play and learn, the local wisdom of the community where they live and grow, as well as hopes and aspirations for the earth and a climate that is friendly again to everyone. PAKIS students and MTs hope that this film medium will be easier to communicate and introduce themselves and their efforts to be involved in reducing the impact and slowing down climate change.

Third, MTs PAKIS and the students have various materials documenting the learning process which will be arranged into a novel book. This book will be a medium for conveying ideas about changes in a community. Specific thematics are being worked on with partners in children's book publishers. It is hoped that this book will become an intermediary for the communication of PAKIS children or students in the forest periphery of Gununglurah and Sambirata Villages with other students with different environmental conditions and socio-economic aspects in the same dialogue, about slowing climate change and a better future.

At present, the various activities carried out by MTs PAKIS are not only oriented towards the running of the learning process but also campaign for a wide audience about the phenomenon of climate change. This campaign aims to provide awareness and literacy to the public about the phenomenon of climate change. Currently, formal education at the primary and secondary levels that includes climate change as knowledge in teaching materials is still very rare. The students and administrators of MTs PAKIS publish the various activities they carry out and become a link to climate change literacy that has not been touched on in primary and secondary education. This is in line with literacy education understood by PAKIS institutional management, that essential literacy must come from what is read, what is written and what can be done so that students have the provisions and skills, including climate change literacy. PAKIS integrates this by understanding the global context of climate change and local actions that can be taken by communities in environmentally friendly local ways.

Psychosocial dimension

Program participants do not struggle with the psychosocial aspects of climate change, but there are still concerns about why it rains more even though it is already the dry season, which causes the cardamom crops they produce to be damaged, wet, and cannot be dried in the sun so that the price becomes very cheap and results in reduced the family income. New knowledge about climate change and how it impacts life makes students finally understand how climate change impacts, and can explain it to their families at home.

Action-learning dimension

The action learning aspect of climate change education activities involves efforts to inspire individuals and communities to take concrete action in reducing the impact of climate change. The purpose of this action learning aspect is to encourage active participation and sustainable contribution in mitigation (emission reduction) and adaptation efforts to climate change. For example, by increasing awareness about climate change, its causes and effects, students even put it in the form of posters. Get knowledge materials about climate change and how to overcome it, do the direct practice of dealing with climate change by planting trees, and campaign about climate change on their social media.

Climate justice

No, but it is indeed very close to economic issues, poverty and how their survival strategy is to survive or get out of poverty.

Indigenous knowledges/participatory methods influence

The community believes that if their forest is good, they will also receive good benefits, so this program encourages them to provide awareness and knowledge to the younger

generation so that they can identify biodiversity in the forest and the environment around them and keep it sustainable for the next generation.

In research applications, local knowledge that influences the research process is the dynamics of using the target students' and parents' time in studying and earning a living. Students are only active at school from morning to noon, and during the day they will join their parents who are already working in their respective farm fields to help out with the work. So, the effective research time is in the morning with students and administrators, and in the evening with parents. Researchers follow the flow of this activity both at school, in the fields and at home to produce intense and natural interactions.

Cultural and regional contexts influence

Yes, the background of MTs PAKIS establishment was to solve the access problem to education and prevent early migration and marriage, then the schools be adapted to the real needs of the community. As religion-based schools, they teach various life skills as communities on the edge of the forest and how to keep their forests sustainable and productive to increase their economic income.

Sharing learnings across geographies

Education about climate change has become a necessity for the community so that they have more awareness and know what efforts individuals and communities can make in dealing with climate change. This system must be extended to reach not only the people on the edge of the forest.

Impacts of the Case Study

Impacts at the Internal Level

From this CCE program, we have conceptualised a curriculum and syllabus for learning about climate change that will be implemented in other schools, which we call "climate care schools" with the title:

“CLIMATE-CARE SCHOOL FOR TSANAWIYAH/SECONDARY EDUCATION STUDENTS”

i. Learning Curriculum and Syllabus

Climate change education is applied in a structured and planned manner to overcome the existing climate change problems. So to offer a solution, use a simple method including:

Provision of general introduction material on climate change

This material emphasises the basic introduction of climate change, its causes and monitoring techniques. In addition, the benefits of climate monitoring knowledge are also introduced. The form of the material consists of:

- Basic knowledge of climate change.
- Weather and climate monitoring techniques.
- Techniques for reading data and analysing weather and climate data.

Provision of material for the climate change adaptation

At this stage, children are given material related to material on climate change adaptation, including:

- Waste management.
- Tree planting (reforestation).
- Biodiversity Inventory.

Provision of materials for climate change mitigation

At this stage, children are given the material on climate change mitigation:

- Introduction of non-timber forest products as a means of food security.
- Efforts to overcome forest destruction.
- Soil and water conservation efforts are continued by making biopore infiltration holes.

The subjects offered are in the classroom and out-class. The material in class is delivered using presentation methods, practice simulations, or discussions. Material outside the class is applied using the case base and project base method. The case base is done by a tutorial guided by an instructor. Meanwhile, the project base is applied in an experimental way guided by an instructor. Tabularly, the subjects can be prepared for six meetings which combine methods inside and outside the classroom. The following is a climate learning table for secondary/Tsanawiyah students.

No.	Subjects	Sub-subjects	Teaching forms	Tools	Duration	Class location
1.	Introduction to Climate Change	Introduction to climate change. The importance of climate change adaptation and mitigation	Lecturing, discussion, simulation	Poster, writing board, marker, gas stove, ice block, pan, water, fan	4 – 6 hrs	In-class
2.	Introduction to Climate change	Weather and climate monitoring, weather and climate data analysis and interpretation	Practice making a simple rainfall monitoring tool (case base), and the simulation of monitoring analysis.	Bucket, ruler, pipe, funnel, jerry can, stationaries	4 – 6 hrs	Out-class (schoolyard)
3.	Climate change adaptation	Waste separation and management	Practice composting from organic waste, practice handicraft making from inorganic waste.	Separated waste, creative tools, compost hole, waste shredder.	4 – 6 hrs	In-class and out-class (schoolyard)
4.	Climate change adaptation	Biodiversity monitoring, replantation	Practice biodiversity monitoring and replanting the rehabilitation area.	Prosumer camera, guidebook, plant seeds.	6 – 8 hrs	Forest around school

No.	Subjects	Sub-subjects	Teaching forms	Tools	Duration	Class location
5.	Climate change mitigation	Introduction to non-timber forest products as food products, to overcome forest degradation.	Introduce forest-based food and medicinal plants. Establishment of forest-based arboretum. Monitoring. assessment and tree maintenance.	Stationaries , forest-based food seedlings and medicinal.	6 – 8 hrs	Schoolyard and forest around the school.
6.	Climate change mitigation	Soil and water conservation	Introduction of soil and water conservation technique. Biopore infiltration holes.	Biopore bore pipe, plough	4 – 6 hrs	Around school

Impacts at Different Levels

From the CCE's observations, research and practices conducted at MTs PAKIS and the evaluation process, we have designed a learning curriculum and syllabus for junior high school students (secondary) or Madrasah Tsanawiyah students. The curriculum may be used by other parties and will be disseminated through collaborative research and community service programs which have been built by three major institutions: the Society and Culture Research Centre of the National Research and Innovation Agency, the Faculty of Agriculture of Brawijaya University and the Faculty of Social and Political Sciences of General Soedirman University. The students from the two universities will become facilitators in the initiation practice applied by researchers, lecturers/teachers and practitioners who are members of this team at the internship and community service practice sites that the students take. Cooperation documents between the three institutions are attached to the report document.

Applicability and Scaling of the CCE Initiative

It is possible and is very likely to be developed in other regions because there are so many cases like this in Indonesia. Finding local people who care about education and the environment for the surrounding community, and making MTs PAKIS a learning experience is a good step.

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