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Global Citizenship Education (GCED)

FINAL REPORT

INTEGRATED TEACHING MODULES OF LITERACY AND NUMERACY FOR PRIMARY TEACHERS IN INDONESIA AND THE ASIA-PASIFIC REGION

Published by

Ministry of Education, Culture, Research, and Technology (MoECRT) Republic of Indonesia

and

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FINAL REPORT

GLOBAL CITIZENSHIP EDUCATION (GCED) - INTEGRATED TEACHING MODULES OF LITERACY AND NUMERACY FOR PRIMARY TEACHERS IN INDONESIA AND THE ASIA-PACIFIC REGION

COLLABORATIONS PROGRAM

ASIA-PACIFIC CENTRE OF EDUCATION FOR INTERNATIONAL UNDERSTANDING (APCEIU)

AND

DIRECTORATE GENERAL OF TEACHER AND EDUCATION PERSONNEL, MINISTRY OF EDUCATION, CULTURE, RESEARCH AND TECHNOLOGY

2023

Acknowledgment

Since 2016, the Asia-Pacific Centre of Education for International Understanding (APCEIU) has been working on the ***Global Citizenship Education (GCED) Curriculum Development and Integration (CDI) Project*** with several countries in the Asia-Pacific region. This initiative aims to incorporate Global Citizenship Education (GCED) into national curricula and share it worldwide.

APCEIU expresses great pleasure in welcoming Indonesia as a partner country for the 3rd Round of the GCED CDI Project. Indonesia's adherence to the philosophical principles of Pancasila, which resonate strongly with the values of GCED, underscores its commitment to global diversity, collaboration, and critical thinking. We anticipated with confidence the successful implementation of the GCED CDI Project in Indonesia, and we are delighted to witness Indonesia's proactive and enthusiastic execution of the project. This effort has significantly bolstered educators' skills and fostered the development of educational resources for GCED.

We are particularly pleased with the development of four modules focused on enhancing STEM (Science, Technology, Engineering, Mathematics) literacy and numeracy competencies. This development is significant, as proficiency in these areas is increasingly vital for the future, where knowledge and skills in these fields are highly sought after.

APCEIU extends sincere appreciation to the Directorate General of Teacher and Education Personnel, Ministry of Education, Culture, Research, and Technology (MoECRT), with special recognition for Prof. Dr. Nunuk Suryani, M.Pd., and Dr. Rachmadi Widdiharto. We also wish to express gratitude to the editors of this report: Sofie Dewayani, Arif Widiyatmoko, Sani Aryanto, Meliyanti, Nita Isaeni, and Ratna Nurlaila.

We commend all contributors involved in the publication of these modules, particularly Yuni Ifayati, Agnita Handayani, Kultum Afifah, and Novita Fatmasari, the teachers who authored the four modules. As well as our colleagues at APCEIU, who supported the development of this project and final report.

We hope that these materials, tailored to the Indonesian context, will serve as an effective tool and pedagogical guideline for teachers to implement the GCED Program, thereby helping students improve their problem-solving skills, practical and creative thinking, and communication abilities as inclusive and open-minded global citizens. We look forward to Indonesia's continued leadership and pivotal role in advancing GCED globally.

LIM Hyun Mook

Director, APCEIU

Acknowledgment

Praise be to God Almighty, because by His grace, we have completed the project/lesson plan module from the series of Global Citizenship Education (GCED) activities - Integrated Teaching Modules of Literacy And Numeracy For Primary Teachers In Indonesia And The Asia-Pacific Region. This project for Indonesia has been carried out in collaboration between APCEIU and the Directorate General of Teacher and Education Personnel, Ministry of Education, Culture, Research and Technology of the Republic of Indonesia (DGTEP) by Implementing an Arrangement (IA) between the Directorate General of Teachers and Education Personnel and the Asia-Pacific Centre of Education for International Understanding under the auspices of UNESCO (APCEIU), dated 22 March 2023, No. APCEIU/C23/035 concerning GCED-Integrated Teaching Modules of Literacy and Numeracy for Primary Teachers in Indonesia and The Asia-Pacific Region.

In the Merdeka Curriculum developed in Indonesia, developing literacy and numeracy competencies is very important for improving the quality of students, so that they have a comprehensive understanding and meaningful learning. The curriculum in Indonesia also focuses on character development by strengthening the Pancasila Student Profile in the learning process. Pancasila is the philosophy of the Indonesian nation, where the characters that are developed include faith and devotion to God Almighty, Global Diversity, Cooperation, Independence, Critical Reasoning, and Creativity.

Collaboration between the Directorate General of Teachers and Education Personnel and the APCEIU is something that strengthens the competence of teachers and strengthens the competence of students in understanding GCED especially in terms of climate change. GCED values are already present in the school curriculum in Indonesia so that the development of teaching modules and project modules is very integrated.

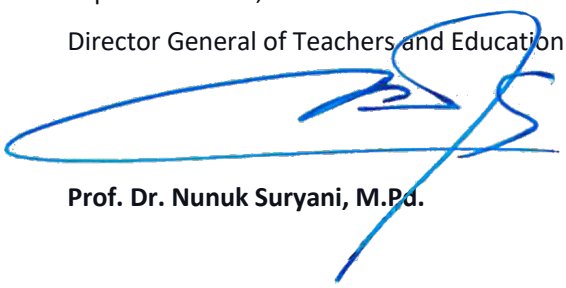
In this activity, there are four modules related to GCED that strengthen STEM (Science, Technology, Engineering, Mathematics) based literacy and numeracy competencies written by selected teachers, including Agnita Handayani, the module entitled "Zero Waste Hero In Action module: Dealing with Waste Through 4R (Refuse, Reduce, Reuse and Recycle) at SDN Cipinang Muara 14 Pagi, East Jakarta", Novita Fatmasari, the module entitled "Avoiding Food Waste, It's Time to Share" problematizes the issue of food waste in urban areas, Yuni Ifayati, implementing the project "Ecobrick: Beat the Plastic" at Fitrah Al Fikri Islamic Junior High School, and Kultum Afifah, the module entitled "Every Drop of Water Counts" which is aimed at raising students' awareness of the water crisis as a local and global problems.

In recognizing the achievement of the zero waste program at SDN Cipinang Muara 14 Pagi, we celebrate more than just a successful waste management initiative. We acknowledge a transformative movement towards sustainable living and environmental responsibility. In this way, the program's impact extends far beyond the school grounds, contributing to a broader movement towards a more sustainable and resilient future.

We would like to thank APCEIU for the collaboration that has been established. Furthermore, these modules can become a reference for teachers in Indonesia and Asia-Pacific, especially in the implementation of Global Citizenship Education which strengthens STEM-based literacy and numeracy competencies, and superior character as world citizens.

September 2024,

Director General of Teachers and Education Personnel,



Prof. Dr. Nunuk Suryani, M.Pd.

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Part 1. Introduction

A. Program Overview

The background, purpose, and the outcomes of the program are explained as follows.

1. Background

The Asia-Pacific Centre of Education for International Understanding (APCEIU) is a UNESCO centre specialising in the promotion of Global Citizenship Education (GCED) that has initiated a GCED Curriculum Development and Integration project in 2016. Participated by 12 countries thus far, the APCEIU project aims to support and facilitate the development of effective national curricular materials (in various forms of the country's choice) on GCED in the respective partner countries, thereby contributing to the achievement of SDGs (esp. SDG 4.7). Integrating and strengthening GCED into curricula through the provision of effective teaching-learning tools and materials is essential in this changing world and in view of achieving global commitments, most notably, the Sustainable Development Goals (SDGs 4.7). The project activities include the capacity-building workshops and the co-production of curricular materials of the country's choice (e.g., teachers' guide, learning materials, books, audiovisual materials, etc.) by the country's key stakeholders - experts and educators - and APCEIU. The expected output supports the enhanced implementation of GCED in educational settings in Indonesia.

This project for Indonesia has been carried out in collaboration between APCEIU and the Directorate General of Teacher and Education Personnel (DGTEP), Ministry of Education, Culture, Research and Technology of the Republic of Indonesia by Implementing an Arrangement (IA) between the Directorate General of Teachers and Education Personnel and APCEIU, dated 22 March 2023, No. APCEIU/C23/035 concerning GCED-Integrated Teaching Modules of Literacy and Numeracy for Primary Teachers in Indonesia and The Asia-Pacific Region.

2. Program Purpose

The program is designed to enhance teacher's capacity for curricular and pedagogical implementation in literacy and numeracy education in the view of GCED.

3. Outcome

The outcome of the program is the attainment of teachers' capacity to develop effective and resourceful teaching modules for literacy and numeracy in connection with Global Citizenship Education.

B. Program Activities

1. Establishment of Curriculum Development Committee

a. Establishment of a GCED Curriculum Development Committee

1) **APCEIU**

NO.	NAME	POSITION	AFFILIATION
1	Jeongmin Eom	Head	Office of Research and Development APCEIU
2	Nakyung Lee	Project Coordinator	Office of Research and Development APCEIU

2) **Directorate General of Teacher and Educational Personnel, MOECRT**

NO.	NAME	POSITION	AFFILIATION
1	Mrs. Nunuk Suryani	Director General	Directorate General of Teacher and Educational Personnel, MOECRT
2	Mr. Rachmadi Widdiharto	Director of Primary Education	Directorate of Teacher for Primary Education
3	Mr. Soesilo	Coordinator of Partnership and Human Relation	Secretariat Directorate General of Teacher and Educational Personnel, MOECRT
4	Mrs. Siti Ubaidah	Coordinator of Partnership/PIC 1	Secretariat Directorate General of Teacher and Educational Personnel, MOECRT
5	Mrs. Meliyanti	Coordinator of Literacy and Numeracy/PIC 2	Directorate of Teacher for Primary Education
6	Mrs. Nita Isaeni	Coordinator of Learning Transformation	Directorate of Teacher for Primary Education
7	Mr. Hadi Wuryanto	Coordinator of Data, Publication and Communication	Directorate of Teacher for Primary Education

8	Mrs. Sofie Dewayani	Expert/Consultant	Article33
9	Mr. Sani Aryanto	Technical Assistant/Scholar	Universitas Bhayangkara Jakarta Raya (University of Bhayangkara Jakarta Raya)
10	Mr. Arif Widiyatmoko	Technical Assistant/Scholar	Universitas Negeri Semarang
11	Mrs. Ratna Nurlaila	Staff	Directorate of Teacher for Primary Education

b. ***Participant's Recruitment***

In order to maximize the outcomes, the Directorate General of Teacher and Educational Personnel ensured that this program is participated by qualified teachers. A selection process was conducted for 48 candidates. Four selected teachers met the following criteria:

1. must be basic Education Teachers with a maximum age of 45 years old;
2. should be physically and mentally healthy;
3. having a minimum of 2 years of teaching experience;
4. having TOEFL ITP Minimum score of 450/ IELTS minimum score of 5.0/ Duolingo minimum score of 75;
5. having integrated literacy and numeracy in the classroom's learning process;
6. having a representative character as an ambassador for Indonesia.

Some documents required were:

1. copies of the Teaching Decree;
2. English Proficiency Certificate;
3. recent colour photographs measuring 4x6 (2 pieces);
4. curriculum vitae with attached certificate of activities relevant to this program;
5. essay related to literacy and numeracy strategies that have been implemented in 500 words;
6. a permission letter from the Head of the Regency/City Education Service.

Apart from checking the completeness and suitability of the files, the committee also checked the candidates' essays for plagiarism as a condition for passing the administrative selection.

Fourteen teachers passed the administration process. Then, they participated in the interview selection. Finally, four teachers passed the interview selection as below:

1. Agnita Handayani
2. Novita Fatmasari
3. Yuni Ifayati
4. Kultum Afifah.

2. Development of Technical Guidelines

a. Information Sharing and Consultations for the Development of Technical Guidelines

The sharing session was delivered on Monday, April 17, 2023. The speakers were alumni of GCED, Mr. Syakti P. Sriyansyah and Ms. Archita Nur Fitrian. The audience of the sharing session was one literacy and numeracy expert, two scholars, four selected teachers, and several people from MOECRT. Mr. Shakti shared knowledge about literacy and numeracy concerning GCED, acknowledgment of the diverse contexts, perspectives, and experiences of 'Our World that You all Bring Today', and 'What we should know about GCED, 21st Century Learners as Global Citizens'. Ms. Archita Nur Fitrian shared about APCEIU and the Online Campus for Global Citizens.

This sharing session gave insight to the selected participants on what and how to design the teaching modules for literacy and numeracy with GCED.

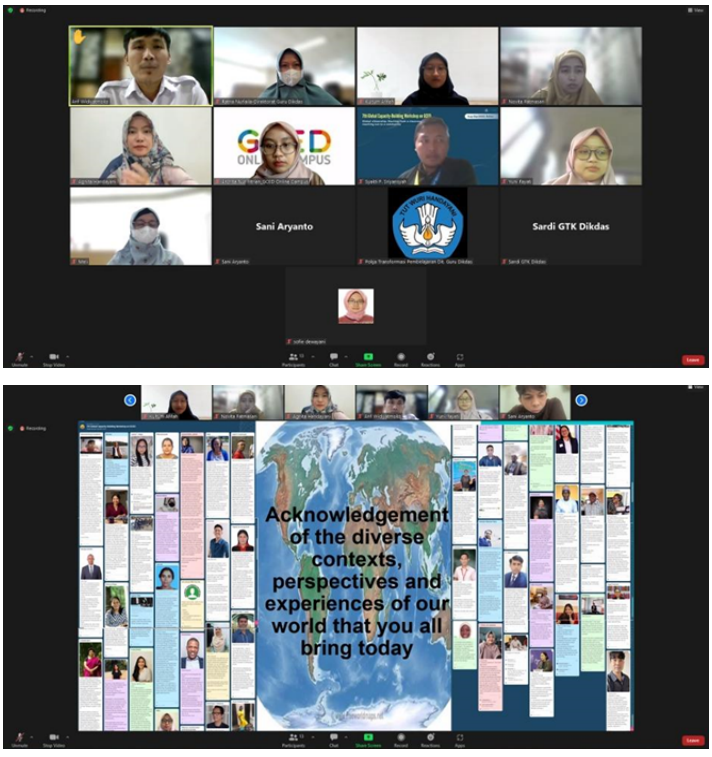


Figure 1 and 2. Sharing Session with The GCED Alumni

b. ***Establishment of Technical Guidelines for Teaching Modules/Lesson Plans Development and Implementation***

The module development technical guidelines were prepared comprehensively to accommodate various main and supporting components and expected to be able to present problems related to GCED, which was focused on the topic of Global Climate Change through STEM (Science, Technology, Engineering, and Math) learning to improve literacy and numeracy skills in the Indonesian context.

The process of preparing technical guidelines for module development took into account input and suggestions from various parties with various backgrounds, including (1) APCEIU; (2) Government (Directorate General of Teacher and Education Personnel, Ministry of Education, Culture, Research and Technology of the Republic of Indonesia); (3) DGTEP Consultant, Ministry of Education and Culture, Research and Technology; (4) Academics; and (5) teachers.

In practice, the preparation of technical guidelines for module development and learning plans was based on benchmarking that was expected to provide a conceptual and contextual picture. The benchmarking for module preparation has been reviewed, compared, and analysed with comparative materials, namely various modules published by APCEIU and several modules developed in Indonesia, especially related to the Pancasila Student Profile Strengthening Project (P5) module. Therefore, the components in preparing technical guidelines are a combination of the APCEIU module and the P5 module.

The steps for developing technical guidelines for module development and learning plans include:

1. Formation of the module development team;
2. Determination of the benchmarking;
3. Preparation of technical guidelines for module development;
4. Review and consultation with APCEIU;
5. Revision;
6. Finalisation.

The steps were conducted simultaneously and had produced technical guidelines for module development and representative and comprehensive lesson plans.

The technical guidelines of module development considered the components expected to represent the situation, conditions, and needs of teachers in Indonesia. There are three main components; (1) Introduction, (2) Main/Discussion Section); and (3) Closing Section.

At first, in the introduction, each module needs to have the following sections

1. **Cover**

   The cover has a module title, which is written briefly, concisely, clearly, interestingly, and relevant to the topic that has been determined.

   a. **Module theme**. The theme must be related to Global Climate Change, which is focused on STEM (Science, Technology, Engineering, and Math) learning to improve literacy and numeracy skills in the Indonesian context.

   b. **Module target**. The objectives of the module are explained briefly for elementary and junior high school students.

2. **Introduction**

   In the introductory section, each writer must present an overview of the identification of problems, solutions, or actions that have been taken and the implications of the modules that have been developed.

3. **Objective, Sequence, and Targets**

   Each author must explain the description of the purpose of developing modules that are tailored to topics that represent issues related to Global Climate Change. In addition, the author must also describe the sequence of the module development and explain specifically the target users of the module.

4. **How to use the module**

   In this section, each writer must discuss the specific technical description of using the module.

5. **Literacy and Numeracy Pedagogy**

   This section describes the literacy and numeracy strategies that the author has integrated into the project activity steps. In particular, the writer needs to explain how the steps of the project activity improve students' thinking skills, skills in conducting simple research, skills in reading numerical symbols, and skills in presenting research findings systematically using written language and effective data presentation.

6. **Project Sequence**

   The sequence of the module is presented through a matrix that includes the components contained in the core, including (1) Introduction, (2) Contextualization, (3) Action, (4) Assessment, and (5) Presentation.

Secondly, in the core/discussion section, the modules compiled must fulfill several components, including (1) Introduction, (2) Contextualization, (3) Action, (4) Assessment, and (5) Presentation.Each component must contain several sub-components, including the Meeting title, objectives, time, media, tools, learning resources, teacher's role, preparation, and implementation. Each module author can also add several supporting subcomponents, such as assignments, learning tips, and enrichment.

1. **Introduction**

   The introduction is a component that describes a comprehensive problem identification tailored to a predetermined topic. In this section, each writer can describe the conceptual basis, juridical, and factual descriptions that occur in the field supported by in-depth analysis results.

2. **Contextualization**

   Contextualization is a component that describes the results of problem analysis related to various Global Climate Change problems contextually. Each writer is expected to be able to synthesise the problems that have been identified and determine the focus of the module development problem. In this component, each writer is expected to be able to present Global Climate Change problems that are developed in STEM-based learning to improve literacy and numeracy skills adapted to the Indonesian context.

3. **Action**

   An action is a form of manifestation of ideas and good practice actions that have been carried out in dealing with the selected problem focus. Action can be in the form of developing various forms of learning interventions, such as developing approaches, models, strategies, and learning techniques. Besides that, action can also be presented through the results of developing programs, products, games, or STEM-based learning systems as an effort to improve literacy and numeracy skills in the Indonesian context.

4. **Assessment/reflection**

   Assessment is an important component to determine the success of the actions that have been carried out; each writer must be able to provide an overview of the assessment presented interestingly. The assessment can be presented in two forms, namely, tests and non-tests, or with other forms of alternative assessments that are presented reflectively.

5. **Presentation**

   A presentation is a form of dissemination and impact of the success of the actions that have been taken.

Table 1. Module's Sub-Component

NO	SUBCOMPONENTS	DESCRIPTION
1	Meeting Title	Contains the stages of activity components named according to the focus of the selected problem
2	Objective	Learning objectives or program implementation to be achieved
3	Media	The media used can be in the form of visual, auditive, and/or audiovisual media
4	Tools and Materials	Tools and materials that support learning activities
5	Learning Resources	Teaching materials, eBooks, videos, and others that can be used as a reference in carrying out learning activities or program implementation
6	Teacher's Role	The role and duties of the teacher as a facilitator, observer, and others
7	Preparation	Teacher preparation steps in starting learning activities or program implementation.
8	Implementation	Technical procedures that describe the stages of technical implementation of learning or program implementation

Authors can also include supporting subcomponents to complete the contents of the module according to their needs. The following are three supporting subcomponents that can be embedded.

Table 2. Module's Additional Sub-Components

NO	SUBCOMPONENTS	DESCRIPTION
1	Task	Make an assignment description an important component in following up on the activities that have been carried out
2	Tips	Suggestions, advice, or practical and helpful instructions in supporting the implemented program
3	Enrichment	Follow up on the actions taken

The third is the closing section that contains a bibliography or references, an index, and a glossary.

Table 3. Module's Closing Section

NO	SUBCOMPONENTS	DESCRIPTION
1	Index	List of important words or terms found at the end of the module, arranged alphabetically which provides information about the page where the word or term is found.
2	Glossary	List of words with explanations in specific fields. Usually also found at the end of the module.
3	Bibliography	Written arranged at the end, containing the authors' name, title, publisher, the identity of the publisher, and year of publication as a source or reference for an author.

3. Development of Teaching Modules and Teaching Training

a. Capacity-Building Workshop for Development of Teaching Modules

Directorate of Primary Education, Directorate General of Teachers and Education Personnel (DGTEP), Ministry of Education, Culture, Research, and Technology (MoECRT), in collaboration with the APCEIU which is a part of UNESCO, has organised a workshop for development of teaching modules that enhance students' literacy and numeracy skills with the theme of Global Citizenship Education to create effective and meaningful learning.

This program aims to improve and train teachers' ability to design learning that strengthens students' literacy and numeracy skills from the perspective of Global Citizenship Education (GCED) themes Climate Change on four modules including:

1. Recycling project
2. Food waste
3. Water conservation
4. Ecobrick: plastic and nature

Climate change is chosen as the core theme for this project because this issue has become a global and local issue with various negative impacts. Climate change affects life on earth shown in the forms of climate instability, sea level rise, ecological disturbances, and others. Therefore, to prevent worse

impacts from global warming, the awareness to protect the environment needs to be demonstrated by all human beings.

Thus, by studying global issues and climate change using the modules developed, it is expected that students in Indonesia will have the knowledge, skills, and awareness of environmental values and issues of environmental problems that can ultimately move students to play an active role in efforts to preserve and protect the environment.

b. Drafting Teaching Modules

The teaching module theme must be related to Global Climate Change which is focused on STEM (Science, Technology, Engineering, and Math) learning to improve literacy and numeracy skills in the Indonesian context. The teaching module systematics for the APCEIU program consists of three main components: Introductory Session, Discussion Section, and Closing Section.

In the introductory section, each writer must present an overview of the identification of problems, solutions, or actions that have been taken, and the implications of the modules that have been developed. In the discussion section, the modules compiled must fulfil several components, including (1) Introduction; (2) Contextualization; (3) Action; (4) Assessment; and (5) Presentation. Each component must contain several sub-components including the Meeting title, objectives, time, media, tools, learning resources, teacher's role, preparation, and implementation. Each module author can also add several supporting subcomponents such as assignments, learning tips, and enrichment. The closing section contains a bibliography or references, an index, and a glossary.

c. Review Workshop for Teaching Modules

The development of co-curricular project teaching modules is carried out through several workshop activities. These activities include several stages as follows.

1) **Teacher Capacity Building Workshop to Develop Teaching Modules**

   The objectives of the workshop include:

   a) To seek for the common perceptions of participating teachers regarding the conceptual framework, scope, and depth of the teaching modules to be developed.
   b) To disseminate technical guidelines for the development of co-curricular project teaching modules.
   c) To increase teacher capacity to develop co-curricular project modules.
   d) To assist teachers in the process of developing teaching module frameworks.

Description: The four participating teachers discussed and worked offline with the guidance of the steering team to understand the conceptual framework, scope, and depth of the teaching modules being developed, as well as the sequence of their development.

Time: May 4-6, 2023.

Output: Co-curricular project teaching module framework.

2) Teaching Module Study Workshop

The objectives of the workshop include:

a) To increase the capacity of teachers to develop their teaching module scripts based on input from the steering team.

b) To guide teachers to improve teaching modules that involve literacy and numeracy strategies.

Description: Four teachers worked offline under the guidance of a steering team.

Time: May 25-27, 2023.

Output: Teaching modules that have been refined based on the results of the study.

3) Workshop on Developing Learning Activities as Part of Teaching Modules

Objective: To increase the capacity of teachers to develop more detailed learning steps in the co-curricular project teaching modules they have made.

Description: Four teachers developed learning activities with the guidance of the steering team.

Time: June 2, 2023.

Output: Manuscripts of teaching modules with detailed learning activities.

d. Drafting Sample Lesson Plans

Each project in the teaching module begins with the introduction, contextualization, action, and assessment stages and ends with a presentation. The explanation of each meeting in the lesson plans is as follows:

1) Recycling project

This teaching module consists of 9 meetings. Each activity is arranged step by step as an effort to develop students' cognitive social-emotional abilities, and behaviour towards the module topic.

The teaching module covers several different topics at each meeting, namely:

Meeting 1: Your Waste is The Waste of The World

Meeting 2: Climate Change Is Real

Meeting 3: Become a Zero Waste Hero: 4R

Meeting 4: Sorting Waste

Meeting 5: Reduce and Reuse

Meeting 6: The Time Has Come To: Recycling

Meeting 7: Zero Waste Hero and His Dreams: Creating Poster and Video

Meeting 8: Evaluation and Reflection

Meeting 9: Take Real Action and Practice Solely

2) Food waste

This module consists of 11 meetings. Each activity is arranged step by step as an effort to develop students' cognitive social-emotional abilities, and behavior towards the module topic. ***The teaching module covers several different topics at each meeting, namely:***

Meeting 1: Food Waste and its Impact

Meeting 2: Seeds and Their Process

Meeting 3: This is My Journey to Meet Great People

Meeting 4: Let's be Grateful by Looking Around

Meeting 5: What's the Farmer's Job?

Meeting 6: Learn to Ask The Farmer

Meeting 7: Ask Mr. Farmer!

Meeting 8: How is it? Wasn't My Journey Long?

Meeting 9**:** This is My Plan, Where's Yours?

Meeting 10: Me, Then and Now

Meeting 11: Finish Our Food, Make Mr. Farmer Smile

3) Water conservation

This module consists of 9 meetings. Each activity is arranged step by step to develop students' cognitive and social-emotional abilities and behaviour towards the module topic. ***The teaching module covers several different topics at each meeting, namely:***

Meeting 1: Water cycle (What is the Process of Rain?)

Meeting 2: Is there enough Water to meet Human Needs?

Meeting 3: Mini Research

Meeting 4: Let's Make an Action Plan!

Meeting 5: Let's Do Something to Conserve the Water! It's Hero Time

Meeting 6: Making a Simple Water Purifier

Meeting 7: Let's Make a Campaign!

Meeting 8: Comprehension Evaluation

Meeting 9: Water Conservation Good Practice Campaign

4) Ecobrick: plastic and nature

This module consists of 13 meetings. Each activity is arranged step by step to develop students' cognitive and social-emotional abilities and behaviour towards the module topic. ***The teaching module covers several different topics at each meeting, namely:***

Meeting 1: Exploration of Issues: The Threat of Environmental Damage Caused by Plastic

Meeting 2: Exploration of Issues: The Threat of Environmental Damage Due to Plastic (Jigsaw Reading)

Meeting 3: Plastic survey

Meeting 4: Video Time: The Plastic Island, The Plastic Kingdom

Meeting 5: Where Did My Plastic Go?

Meeting 6: Ecobricks: Beat The Plastics!

Meeting 7: An Introduction to Ecobricks

Meeting 8: Let's Build our Ecobrick! - Eco-literacy Corner

Meeting 9: Inspiration: Stories of Environmental Activists.

Meeting 10: Let's Have Fun: Ecobrick Board Game

Meeting 11: 21 Days Eco-friendly Lifestyle Challenge

Meeting 12: Ecobrick Campaign!

Meeting 13: Ecobrick Workshop with Parents

e. ***Capacity Building Workshop for Teacher Professional Development (TPD) in Seoul, South Korea***

The objective of the workshop is to provide opportunities for teachers to learn from scholars and educators in Korea to enhance the quality of the teaching modules they develop.

Description: The Ministry of Education team, including four teachers, participated in a workshop in Korea to enhance GCED knowledge and practice concerning literacy and numeracy. The four teaching modules developed by teachers were enriched as scholars and practitioners in Korea gave inputs.

Time: 24 - 28 July 2023.

Outcome: Increased teachers' capacity and understanding of GCED related to literacy and numeracy.

The themes of the daily activities of the workshop and the lessons learned from the Indonesian team perspectives are as follows.

1) Day - 1: The theme of the first day focused on Global Citizen Education in the context of multiple crises and sustainable development goals in education. The presentations provided a

wider and deeper perspective of GCED in the context of education, especially the ways GCED should be enacted and integrated more effectively into national curricula as well as classroom teaching.

2) Day - 2: The focus of the second day of the workshop was the educational system in South Korea, especially the teacher's education system. The presentations provided perspectives on how quality education should be improved by enhancing the capacity of educators, providing a more secure incentive system as well as protection for their professional roles.
3) Day - 3: The activities of the third day gave opportunities for the Indonesian team to interact and learn from educators from South Korea. Through interactive games and play, the activities opened new perspectives on how transformative pedagogy can be implemented in raising students' awareness as global citizens.
4) Day - 4: The presentations given by some Korean teachers provided insight into how SDGs can be taught explicitly in classrooms using appropriate pedagogies. During this last day, all modules developed by Indonesian teachers obtained insightful feedback from APCEIU for further revisions. The feedback strengthened the modules' implementation in the classrooms.

4. Revision and Finalization of Teaching Modules and Lesson Plans

Upon being presented in the APCEIU workshop in South Korea, the teaching modules and the lesson plans were revisited and revised to consider APCEIU's feedback.

a. Revision and Finalization of the Teaching Modules and Sample Lesson Plans

The feedback from APCEIU included suggestions such as

1) More explanations on the writing guideline regarding the variety of teaching pedagogies used in the modules, such as problem-based, project-based, and inquiry-based. Such explanations can provide a context to understand the approaches used in the modules.
2) More explicit insertion of GCED in the teaching pedagogy. Transformative pedagogy needed to be reflected through all activities in the projects.
3) Some projects need to use a more inquiry-based approach. The theme of the project had to be left for students to determine based on their synthesis and conclusion from the reading.
4) Developing students' social and emotional awareness as global citizens were to be based on activities to ask students to construct their identities (for example, using the Social and Emotional Learning and Teaching or SELT).

The teachers revised their teaching modules before they were implemented in their classrooms. An online meeting was conducted on August 10th, 2023, to list, summarise, and clarify all the

feedback and to make sure that all the feedback is accommodated in the revisions. The steering committee members checked the revised modules and notified the teachers if the modules were ready to be implemented in their classrooms.

On September 5th, 2023, a face-to-face meeting was conducted to check on the classroom's implementation, specifically, the challenges and adaptations made to overcome the challenges. In line with the implementation process, the teachers were also asked to write their daily reflective essays. The reflections focused on students' learning processes and responded to the following guiding questions.

1) Who are among my students that demand my attention today? Why?
2) What activities I considered successful today? What makes me think that way?
3) What activities attracted my students the most? What supports my observation?
4) What should I do to follow up?
5) How would I describe today's activities in one sentence?

The daily reflections were then summarised, synthesised, and discussed in the online meeting on October 5th, 2023. The meeting was attended by all teachers as well as the steering committee members. The discussion listed some lessons learned and challenges during the project implementations. These reflective findings were then compiled and presented by the Director of the Primary Education at the APCEIU Conference on October 18th, 2023, in Seoul, South Korea.

b. Reflection Workshop on Teaching Module Implementation in Class

The objective of the workshop is to provide opportunities for teachers to write down their reflections on the implementation of teaching modules in class.

Description: Four teachers developed successful practices and made changes through reflective writing with the guidance of the steering team.

Time: November 6-8, 2023.

Output: Reflective good practice teaching module for four teachers

In this event, all committee members and teachers gathered to discuss reflective points from the implementation process and wrote them for the report.

c. Dissemination

The disseminations of the themes developed in the modules have been conducted by the teachers in the implementation of the projects. The teachers presented the implementations of the modules to the headmasters, their teacher fellows, as well as the parents so that the students' change of behaviours can sustain and set as good examples for other students. This way, school community

members can follow the good behaviours students have enacted because of this project, such as reducing the plastic use, avoiding food waste, reducing water use, and recycling. At the end of each project, students were also asked to get involved in a campaign to invite other students to be aware of climate change and become the agent of change.

5. Submission of Final Report

a. Writing and Submission of Final report

The report writing on a series of activities was prepared by the Directorate General of Teacher and Education Personnel, Academics, and consultants in the field of literacy to conclude and reflect on project outcomes. After a report to summarise project outcomes was drafted and submitted on November 13th, 2023.

b. Development of Online Education Materials

The module will be published digitally via the website of the Directorate of Teacher for Primary Education, Ministry of Education, Culture, Research and Technology, Republic of Indonesia, gurudikdas.kemdikbud.go.id, as well as other relevant digital platforms from MoECRT of the Republic of Indonesia and APCEIU.

Part 2. Activity Report

Activities conducted by the Indonesian teachers are explained as follows.

A. Agnita Handayani

1. Lesson Reports

Schools as education centres for the younger generation also contribute to raising awareness of waste management and caring for the environment through character education. Character education through the implementation of the Zero Waste Hero Time for Action module: Dealing with Waste Through 4R (Refuse, Reduce, Reuse and Recycle) at SDN Cipinang Muara 14 Pagi, East Jakarta, has had a positive impact on students, teachers, school principals and parents. The following are the positive impacts of implementing the module.

a. For students

1) Students' awareness as world citizens increases in line with the growth of cognitive and social-emotional abilities regarding waste problems and their impact on climate change.
2) Growing awareness of students as world citizens to take real action against waste problems through the 4R movement.
3) Creativity and critical thinking skills are honed through recycling activities as a solution to reducing the waste problem.
4) Start implementing a sustainable lifestyle by reducing the use of items that will become waste by bringing your food and drink containers from home.

b. For Teachers

1) Awareness as a world citizen increases through the role of facilitator and role model for students in raising awareness of waste management and caring for the environment.
2) Teacher creativity is honed through various learning activities during module implementation. Teachers also create interactive teaching media such as zero-waste snakes and ladders.

c. For School Principals

1) Start implementing a sustainable lifestyle by reducing the use of items that will become rubbish, as stated in the curriculum urging students to bring food and drink containers from home.
2) Creating a literacy environment based on a sustainable lifestyle through murals and information poles.

d. <u>For Parents</u>

Awareness to start implementing a sustainable lifestyle by reducing the use of items that will become waste at home. This can be seen from the start of concern about preparing food and drink containers from home and bringing their own shopping bags.

2. Project Reports

There are nine types of activities in this module. Activities 1 and 2 are the introductory stage. Students explored the issues of waste and climate change. Next, in the contextualization stage in activities 3 and 4, students understood the concept of being a zero-waste hero through 4R and identifying types of waste through waste sorting activities. At the action stage, in activity 5, students identified the concept of reducing waste and recycling by conducting interviews with school residents regarding activities to reduce waste production and recycling. Students made zero waste campaign posters through 4R and recycled plastic bottles into drawstring pencil holders in activities 6 and 7. In activity 8, students carried out self-evaluations through quizzes and reflections. In this stage, students had room to reflect by making conclusions about the most effective activities in reducing waste production. The presentation stage was the closing flow of learning in this module. At this stage, students shared the results of real actions in the form of products produced and good practices carried out.

Apart from the nine various activities, students were also invited to experiment with 30 4R challenges: "I am an Indonesian Child, I am a World Citizen" to achieve the module objectives. Students could complete the challenges given by carrying out nine various activities in the module. The 30 4R challenges include:

1. looking for information on National Waste Day, the causes of climate change and its impacts, and looking for information about zero waste;
2. refusing the use of plastic, such as not buying plastic-wrapped snacks and refusing to use plastic straws;
3. reducing waste production by bringing supplies from home and bringing food and drink containers from home;
4. reusing existing plastic containers;
5. recycling plastic waste at school and home and making recycling video or picture tutorials; and
6. sharing good practices through the zero-waste hero campaign.

3. Final Reports

The Zero Waste Hero Time for Action module: Dealing with Waste Through 4R (Refuse, Reduce, Reuse and Recycle) has been completely implemented at SDN Cipinang Muara 14 Pagi, East Jakarta. The following is the implementation report.

7. Introduction Stage

At the introductory stage in activities 1 and 2, students were given reinforcement regarding waste issues in Indonesia and the world. Then, awareness and understanding of the relevance of this material to the challenge of climate change were built from the waste issue.

Figure 3. Zero Waste Hero 30 Day Challenge

At the introduction stage, the teacher also explained the 30-day challenge that they would undertake while studying the Zero Waste Hero module. The teacher asked questions related to waste issues, such as: "Have you ever thrown rubbish carelessly?"; "Where will the waste end up?"; and "What is the impact of waste on our earth?". At the end of the activity, students wrote a reflection using a reflection triangle.

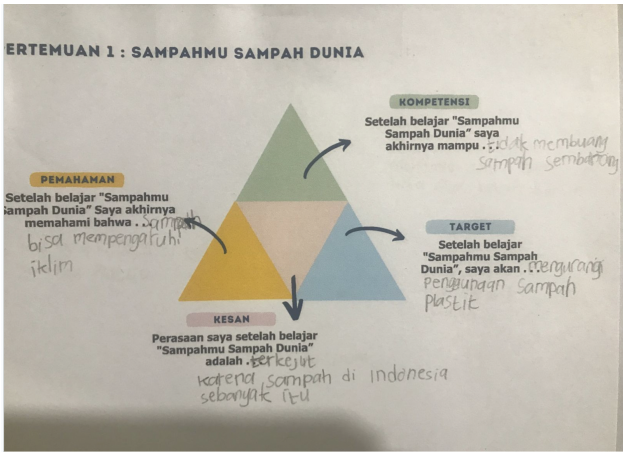


Figure 4. Example of students' reflection

8. ***Contextualization Stage***

At the contextualization stage in activities 3 and 4, students understood the concept of being a zero-waste hero through 4R and identifying types of waste through waste sorting activities. Topics around 4R were made interesting through the Zero Waste Snakes and Ladders game. Using the Snakes and Ladders game in zero-waste learning increased students' interest in learning, strengthened their understanding of concepts, encouraged positive collaboration and competition, improved critical skills and problem-solving, and delivered learning material more interestingly.

Figure 5. Zero Waste Snakes and Ladders Game

At the end of the activity, students not only wrote reflections on the reflection triangle, but they were also invited to reflect on themselves as zero-waste heroes. They were invited to make responsible decisions for themselves as world citizens.

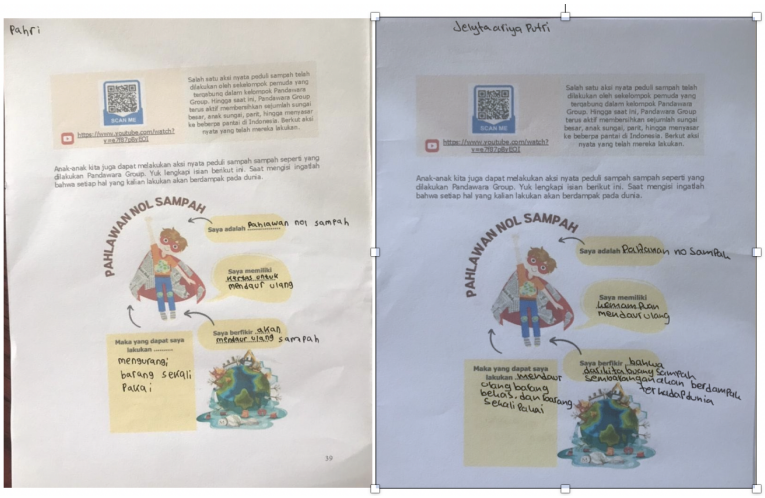


Figure 6. Example of Social Emotional Learning and Teaching (SELT)

9. ***Action Stage***

At the action stage in activity 5, students identified the concept of reducing waste and recycling by conducting interviews with school residents regarding activities to reduce waste production and recycling. Students then analysed what activities can reduce waste more. At the action stage, students showed their awareness by bringing food and drink containers from home.

Figure 7. Students Interviewed Activists

Figure 8. Students Bring Their Own Food Containers

In the action stage in activity 7, students made posters with the theme of zero-waste heroes. Continuing with the activity, eight students made plastic drawstring pencil cases using used bottles, rags, and other materials. After producing a drawstring pencil case, students recycled it with their families at home. This activity was aimed to educate students' parents in raising awareness of waste management and caring for the environment.

Figure 9. Students Made Pencil Cases Out of Recycled Plastic Drawstring

10. Evaluation and Reflection Stage

In the 8th activity, students carried out self-evaluation through quizzes and reflections. At this stage, students could reflect by making conclusions about the most effective activities in reducing waste production. Most students already understood the concept.

Figure 10. Evaluation with Quizizz

11. Presentation Stage

The presentation stage is the closing flow of learning in this module. At this stage, students shared the results of real actions in the form of products produced and good practices carried out. Students also presented the zero waste hero poster as a tool to educate the school community to raise awareness of waste management and care for the environment.

Figure 11. Project Expo

Figure 12. Zero Waste Hero Campaign

4. Performance Analysis

Implementation of this module are the implications for the three GCED domains, namely cognitive, social-emotional, and behavioural. Students are able to understand the problem of waste and its impact on climate change. Students are also able to understand what activities can reduce waste production critically. In line with the growth of cognitive abilities, social-emotional abilities regarding waste problems and their impact on climate change also begin to grow. This can be seen through students' real 4R actions regarding the waste problem. Implementation of this module also hones creativity and collaboration through recycling activities as a solution to reduce waste problems. So, they start implementing a sustainable lifestyle by reducing the use of items that will become waste.

5. Challenges

a. The habit of reducing waste production has not yet become a sustainable lifestyle for students and school residents.

b. Some students still think recycling is better than reducing waste.

c. During the recycling process, there are still some students who deliberately produce waste so they can recycle it.

d. There is a need to educate awareness of waste management and care for the environment within the family.

e. Much of the waste produced in schools comes from the packaging of students' snacks and drinks, therefore cooperation between schools and canteens is needed to reduce the production of plastic waste.

f. There are no sustainable waste processing facilities available in schools so that after being sorted, the waste comes back together when transported to the waste landfill.

6. Reflection

a. Students felt happy and enthusiastic about implementing the module. Students who are usually less enthusiastic in learning activities appeared enthusiastic in activities.

b. Students had difficulty understanding the concept of climate change. Teachers needed to provide initial knowledge about seasons, weather, and climate before entering climate change material.

c. It was more effective to print zero waste snakes and ladders on large paper (minimum A3). It is best if the teacher has prepared equipment and divided groups at the beginning of the activity.

d. Students can sketch a zero-waste hero action poster from home so that it is more efficient and minimizes the potential for making the same poster.

e. For the evaluation activities, teachers can use the Quizizz application or Google Form.

f. Implementing the module requires collaboration and cooperation from various parties. By inviting all school members and parents of students, the results obtained were in accordance with the initial objectives.

g. The involvement of the principal as a policy maker in the school is very important. The involvement of the school principal is a policy in the form of an appeal for students to bring food and drink containers from home. Another form of involvement is by creating a literacy-rich environment based on a sustainable lifestyle through murals and information poles.

7. Dissemination

The implementation of the module was disseminated to students' parents through follow-up recycling activities. After students recycled at school, they educated their families at home about waste management awareness and caring for the environment through recycling activities together at home.

B. Novita Fatmasari

The module entitled “Avoiding Food Waste, It’s Time to Share” problematizes the issue of food waste in urban areas. Such issues have also become a part of a global phenomenon alongside the food crises. In this project, students were invited to construct their identity as global citizen who takes responsibility for the global problems, one of which is the food crisis. Using the SELT (Social Emotional Learning and Teaching), the activities in this module invite students to reflect on what they just learned, how they felt, what they want to do, and what they’re capable of doing.

1. Lesson Reports

a. The teacher’s most important lesson was when she was able to learn and implement the SELT approach. She found out that this approach has been effective in developing students’ awareness and understanding of others through self-identity constructions. Novita also developed an awareness of the importance of teachers as role models for students’ behavioral change. During class, she consistently brought her lunch box with healthy meals in a good portion. She kept reminding her students to do the same.

b. Upon the completion of the project, students still enact their roles as promoters of food management at home and in their surroundings. Parents told that their children kept reminding the family members not to waste food and to manage the food waste, for example, by making compost at home. They also reminded parents to shop wisely and improve the way they stored vegetables so as to make them long-lasting.

c. Parents experienced benefits from their children’s change of behaviour. Parents had learned more about better food management and storing systems and learned about compost-making. Avoiding food waste has benefited the families financially.

2. Project Reports

This project is conducted in a planned series of activities as follows.

a. **Introduction**

At this stage, students were introduced to the issues of food waste and food crisis as a local, national, and global phenomenon. They also learned where their daily food came from and who was involved in the chain of its production.

b. **Contextualization**

In a period of some days, students performed a role play in which they acted out as food providers, producers, food industry actors, and consumers. They also deepened their understanding of the food production process and some issues related to it (i.e., farmers' low wages) through some literature. They then explored their neighbourhood to see the issues in their distant context. At the end of the stage, they wrote interview prompts based on their understanding.

c. **Action**

Students interviewed farmers and conducted a mini research on the process of food production, who the actors were, and what activities took place along the process. They also prepared some materials for the food crisis campaign.

d. **Reflection and Follow-Up**

Students were invited to reflect on the new understandings and lessons learned. They were also asked to list some things they should stop doing and some good practices they should maintain at school and at home related to better food consumption habits.

e. **Presentation**

Students were to launch a "Finish Your Food" campaign for students in other classes and other school members. In the campaign, they also called for respect for those who contribute to bringing food to the table.

3. Final Reports

All activities were conducted as planned with a minor adjustment. The adjustment included the insertion of the SELT approach and the use of more appropriate reading materials. The implementation of the stages is as follows.

a. In the introduction section (the first two activities), students learned the issues of food waste by discussing a nonfiction book, some articles, and a video. To read and access information effectively, students mapped their understanding and synthesis from the reading using the "what I have known - what I want to know - what I have learned" framework. They also discussed the processes involved in making the foods served on the table.

Figure 13. Students Presenting Mindmap from the Reading

b. In the contextualization stage (which is the third activity), students were given maths problems to calculate how much food waste piled up if every child left two rice grains. By considering the amount of food waste that a big population like Indonesia could produce, the students were asked to imagine the impact of food waste problems on the world.

Figure 14. Students Calculated the Amount of Food Waste a Country Can Produce

c. The action stage consists of fourth, fifth, and sixth activities in which the students acted out the roles of farmers, sellers, and other actors in food production chains. They also conducted a mini research to investigate a family's financial management related to food consumption. They also identified foods they really need and those they want.

Figure 15. Students Help Their Families Creating Composters

Figure 16. Students Interviewed Farmers

d. In the reflection stage, students reflected and synthesised what they had learned and what they needed to implement related to the ways foods should be managed.

Figure 17. Students Participate in Reflective Discussion

e. In the presentation stage, students presented their reflections and findings of research to the other classes. The findings were organised in the format of campaign materials to be disseminated to all the school members as well as community members outside of school.

Figure 18. Students Disseminate Findings as They Campaign to Other Classes

Throughout the process, the students were able to achieve outcomes in the three domains of GCED: cognitive, socio-emotional, and behavioural. Such achievements were seen in the ways students responded to multimodal literature critically and reflectively, the empathy they developed during and after interviewing the farmers, and after playing the role of a housewife who manages the food at home. The behavioural outcomes were seen in their attitudes toward foods. They carefully consider what to bring for lunch so as not to waste it, share the lunch with friends, and contribute to families' food budgeting. Their families gladly welcomed the students' behaviour change.

4. Performance Analysis

The teacher observed some impacts on students' learning and behaviours. Some outcomes are as follows.

a. Observed outcomes on the cognitive dimension that include students' critical and reflective thinking about the impact of their actions on the world's environment quality.

b. Observed outcomes on behavioural dimensions that include students' initiative for food waste problems, i.e., offering and sharing their lunch to classmates.

c. Observed outcomes on the socio emotional dimension that include the findings that students raised awareness toward their daily food consumption habits. Students also showed respect and deepened their understanding that it takes much effort to serve their food on the table.

5. Challenges

As for the challenges, the teacher experienced some difficulties, as follows.

a. Finding resource persons like food providers and farmers has been a challenge in the urban outskirts area where she lives since only a few of them were available. She eventually managed to find a farmer in a paddy field near school who was willing to be interviewed by students.

b. Improving students' confidence in becoming promoters for the food crisis took a long process. She finds out that students' behaviour change should be sustained through a lifetime, so the change should also occur at home. By involving parents in this project, she can ensure that the food management system at home can be improved with the parents' decisions regarding food purchase and consumption habits.

6. Reflection

The teacher's reflective standpoints regarding the project are as follows.

a. Parents' involvement in the project can help sustain students' change of behaviour.

b. Other teacher fellows should be involved in the project's campaign to replicate the change not only in one classroom but also at the school level.

c. The campaign materials created by the students have been shown to be effective in inducing change, so the socialisation of the materials should be extended to include in-school facilities such as the school canteen and out-of-school areas such as nearby restaurants.

d. School initiatives should also follow students' attempts to manage organic waste. For example, the school can manage the food waste from the canteen by making a composter.

7. Dissemination

The awareness of reducing food waste was well disseminated to students and teachers in other classes as well as to community members outside of school. Students created their campaign materials and were provided with the time and place to do the campaign. The campaign involving the school members is documented as follows.

Figure 19. Students Campaign in Other Classes

Figure 20. Students Presented that It Takes a Lot of Work to Become a Farmer

C. Yuni Ifayati

1. Lesson Reports

Implementing the “Ecobricks: Beat the Plastics” project at Fitrah Al Fikri Islamic Junior High School as an environmental education endeavour provides many positive lessons. Through this project, not only students but also teachers and parents have learned to foster virtuous values towards nature actively. The following are the positive lessons learned through this project:

a. For Teacher

1) This project has raised the teacher's awareness that she has many essential roles in improving students' environmental awareness in schools. As a project facilitator, the teacher attempted to help the students better understand ecobricks, plastic, and nature. As a trainer, the teacher had to ensure the students make a good eco brick, meet the density standard, and have a sustainable function. The teacher also played as a role model. Leading by example is the best way to achieve the goal of ecobrick, such as reducing consumption, being aware of plastic use, using more eco-friendly products, and making ecobrick from the plastics in our homes.

2) This project has involved parents actively so the teacher learns valuable lessons on how to cooperate and communicate effectively with parents to support the students' learning connection at home and school.

b. For Students

1) Students are actively involved in the project, which allows them to explore their cognitive, social-emotional, and behavioural abilities. Students' critical thinking skills are also trained through several visible thinking routine activities.

2) This project trains students' literacy and numeracy skills. Students read several sources of information critically, such as articles, local and international news, and other multimodal texts.

3) The majority of students have started to be more environmentally conscious. This can be seen in new habits that emerge in daily life, such as the discipline of sorting waste, storing plastic used for snacks for eco brick making, and bringing their own tumblers and food containers. This is a good indication that students' environmental awareness is gradually increasing.

c. ***For Parents***

This project has raised parents' awareness of the importance of environmental education at school and at home. Students need examples of behaviours that they can easily find and see daily, so the parents are encouraged to behave in an environmentally friendly manner. In the "21 days challenge" activity, parents have been involved in encouraging and helping students do the challenges. Parents have gained some positive insights and started sorting their waste and making ecobricks from household plastic waste.

2. Project Reports

This module is organised in several stages. Firstly, the introduction stage consists of two activities that invite students to identify the problems caused by excessive plastic consumption. Students practised observing, reading, and concluding how terrible plastic pollution affects the world.

Secondly, it was the contextualization stage (activities 3 to 6). At this stage, students observed how much they and their families used plastic daily. Students were also presented with data and facts about plastic, its relationship with humans, its usefulness, and its negative environmental impact. Students were also introduced to ecobricks as an alternative solution to plastic pollution.

The third stage is the action stage (activities 7 to 8), which invites students to take action by making ecobricks. Students were asked to prepare the things needed before the classes, such as collecting dry and clean used plastic from home and bringing it to school to practise making ecobricks together. As a further action, students were asked to design an eco-literacy corner from the ecobricks they made. It is an effort to campaign the ecobrick goal of reducing the use of plastic at school.

The fourth stage is reflection/assessment (activities 9-11). This stage invites students to reflect on their understanding of plastic and their learning process. Students were asked to review their knowledge about ecobrick through a board game. Then, students did a 21-day challenge to form plastic-free habits.

The fifth stage is the presentation. At this stage, students created a literacy work as an environmental action campaign. This work was published in the school's Eco-literacy corner. In addition, students invited their parents to make ecobricks together in an ecobrick exhibition session.

3. Final Report

The project "Ecobrick: Beat the Plastic" was completed. Students performed the entire set of activities in each meeting well. The teacher attempted to do her best to facilitate the project. The following is a report and documentation of the activities carried out.

d. Introduction

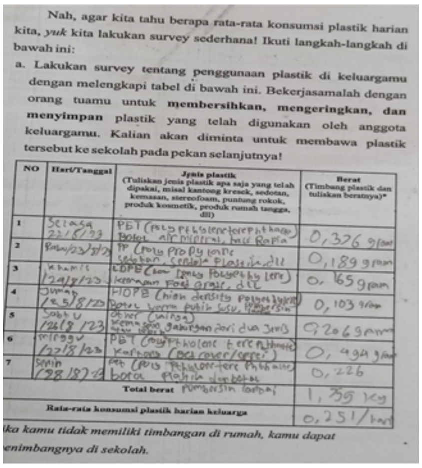
At this stage, students did several literacy activities. Students explored various environmental issues, such as the threat of environmental damage due to plastic. Students brainstormed about plastic waste and its problems around them. This brainstorming uses the Visual Thinking Routine technique (Interview the Picture). Students were shown several photos and created questions to be asked about the object of the photograph. This activity was followed by role-playing as if students become objects in the picture. The next activity at this stage was jigsaw reading. In groups, students critically read news related to the landfill (called TPA in Indonesia) that can no longer accommodate residents' garbage. After the reading activity, students discussed and shared information with other group members.

Figure 21. *Interview the Pictures* activity and role play

Figure 22. *Jigsaw Reading* Activity

e. ***Contextualization.***

At this stage, students did numeracy activities. Students recorded their family's daily plastic use for one week in a provided table. Students collected data on how much plastic they consumed. This activity was intended to raise awareness that those who produce plastic waste are humans. Then, students watched the documentary 'Plastic Kingdom' or 'Plastic Island'. Students not only watched videos but also did worksheets that helped them gather facts about plastic problems. The activity continued with students reading the module about the story of plastic, discussing the relationship between humans and plastic, identifying where plastic eventually goes, and how it impacts the biosphere.



Nah, agar kita tahu berapa rata-rata konsumsi plastik harian kita, *yuk* kita lakukan survey sederhana! Ikuti langkah-langkah di bawah ini:

a. Lakukan survey tentang penggunaan plastik di keluargamu dengan melengkapi tabel di bawah ini. Bekerjasamalah dengan orang tuamu untuk **membersihkan, mengeringkan, dan menyimpan** plastik yang telah digunakan oleh anggota keluargamu. Kalian akan diminta untuk membawa plastik tersebut ke sekolah pada pekan selanjutnya!

NO	Hari/Tanggal	Jenis plastik (Tuliskan jenis plastik apa saja yang telah dipakai, misal kantong kresek, sedotan, kemasan, stereofoam, puntung rokok, produk kosmetik, produk rumah tangga, dll)	Berat (Timbang plastik dan tuliskan beratnya)*
1	Selasa 22/8/23	PET (Poly ethylene terephthalate) Botol air mineral, tali Rafia	0,376 gram
2	Rabu/23/8/23	PP (Poly Propylene) sedotan, sendok plastik, dll	0,189 gram
3	Kamis /24/8/23	LDPE (Low Density Polyethylene) kemasan Food grade, dll	0,165 gram
4	Jumat /25/8/23	HDPE (high density polyethylene) Botol warna putih susu, pembersih	0,103 gram
5	Sabtu /26/8/23	Other (lainnya) Kemasan gabungan dari dua jenis [illegible]	0,206 gram
6	Minggu /27/8/23	PET (polyethylene terephthalate) Kartons (Bed cover/sprei)	0,494 gram
7	Senin /28/8/23	PET (Poly ethylene terephthalate) botol plastik dan botol pembersih lantai	0,226
		Total berat	1,759 kg
		Rata-rata konsumsi plastik harian keluarga	0,251/hari

[J]ika kamu tidak memiliki timbangan di rumah, kamu dapat [m]enimbangnya di sekolah.

Figure 23. Discussing the Relationship Between Humans and Plastic

f. ***Action.***

At this stage, students learned how to make the ecobrick through the workshop. The students understood the ecobrick principles and the philosophical reasons why they needed to make ecobrick. Students also practised making ecobricks from the plastic 'waste' they had previously collected from home. Further, students also prepared a 330 ml Aqua bottle. Compared to larger bottles, this volume size is considered enough to give an ecobricking experience for learners with a limited amount of time. Surprisingly, 95% made good ecobricks that met the weight and density standards. At the end of the workshop, students also practised making modular ecobricks.

Figure 24. Students made ecobricks from plastic collected at home

Figure 25. Students designed simple indoor furniture using modular ecobricks

g. Reflection and Follow - Up

At this stage, students read and drew inspiration from environmental activists, such as Russell Meier and Ani Himawati (Ecobrick founders), Melati and Isabel Wijsen (Bye Bye Plastics), Aeshnina Azzahra (Ecoton), and five youths from Bandung who inspired the community through river clean up actions (Pandawara Group). Students also answered some questions and wrote about their ecobrick experiences as a reflective activity. To put the learning into a fun atmosphere, students also played an ecobrick board game to review the topic.

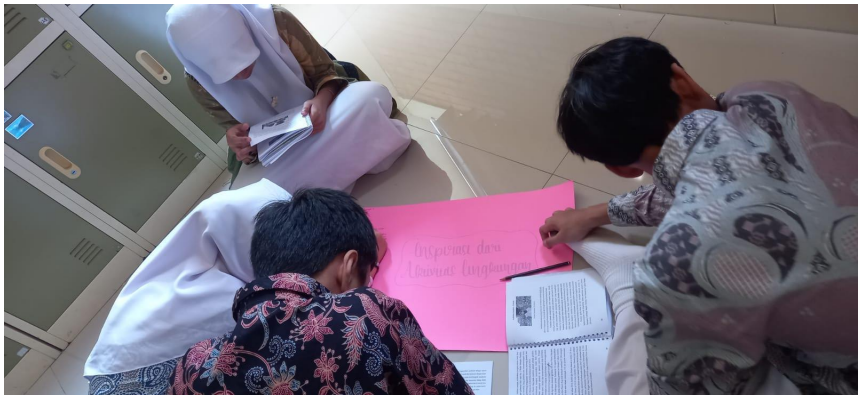


Figure 26. Students Read the Simple Biography of Environmental Activists

h. Presentation

At this stage, students learned to do campaigns through various ways to reduce plastic consumption in everyday life. Students created several literary works, such as short stories, comics, picture stories, posters, etc. Then, students invited parents to learn about ecobrick through the workshop. The teacher was the workshop facilitator, and the students became the mentors for the parents to make ecobrick bottles.

At the end of the workshop session, students and parents received a 21-day challenge sheet to be completed together. The teacher encouraged that this challenge aims to raise environmental awareness and to create good habits towards nature. Students extremely needed examples from teachers at school and parents at home. In the next meeting, students designed a piece of indoor furniture using ecobrick modular.

Figure 27. Students and Parent Collaboration in the Ecobrick Workshop

4. Performance Analysis

This project has implicated the three GCED domains: cognitive, socio-emotional, and behavioural. Students were able to understand why they needed to ecobrick critically. They also grasped the underlying principles and philosophy of why ecobricking is necessary, had a broader knowledge of plastic and its production process, and recycling issues (cognitive). They were also socially and emotionally skilled and more aware of the dangers of misusing plastic and the long-term negative effects if humans continue to be ignorant of the plastic problem. On the behavioural aspect, this ecobrick activity was a concrete action for students to change their lifestyle and gradually become environmentally conscious.

5. Challenges

While this project's implementation went well, some challenges were encountered. These challenges can be used as lessons learned in future practices.

a. Building students' habits to have an eco-friendly lifestyle requires real examples from the adults around them, such as teachers at school and parents at home. Yet, not all teachers at school or parents at home had the same environmental paradigm.

b. There was still a misconception that ecobrick is a craft. The challenge for teachers is to provide a comprehensive understanding of ecobricks as a medium for a plastic transition. By taking action to make ecobrick, we will become aware of our plastic consumption so that we can gradually reduce the use of plastic in our daily lives.

c. Since some activities involved parents, communication was also challenging for the teacher. Some parents received the information well and did the follow-up instruction. However, some parents just read without a follow-up.

d. This project required supporting tools such as scales, silicone glue and shots, and bamboo to pack the plastic. Ensuring the workshop tools were available was very important and challenging.

e. Al Fikri opened a new canteen. Although this canteen uses the concept of minimal waste, but it still sells snacks in plastic packages, which impacts the amount of plastic used (compared to before the canteen opened).

6. Reflection

Here are the things that teachers reflected on while implementing the project, Ecobrick: Beat the Plastic:

Regarding project flow, meeting six could be combined with meeting seven. The workshop opened with a presentation on ecobricks. Then, meeting 11 on the 21-day challenge could be combined with meeting 13 during the workshop with parents. This challenge will be a joint commitment between the school, parents, and students to strive for and get used to an eco-friendly lifestyle.

Figure. 28. Dissemination to Parents

Related to students as learning subjects, it is essential to understand the student profile. The average student at Al Fikri likes explorative activities that make them mobile. Some students seemed less enthusiastic during independent reading, but when it came to role-playing and ecobricking activities, they were very excited.

When communicating with parents, it is essential to remind parents to help students collect data on the use of plastic in the family and sort plastic at home. Parents play the most critical role in controlling plastic flow in and out of the house. Parents play the most crucial role in maintaining plastic flow in and out of the house.

Regarding the equipment preparation, students must bring plastic waste from their homes. Teachers must emphasise that the plastic brought is not a new one. Teachers can work with the nearest waste bank to provide what the workshop needs if needed. We can calculate the need for used plastic by multiplying the number of students by the minimum weight of the ecobrick bottle. For example, 40 students will ecobrick a 330 ml bottle, so 40 x 110 gr is 4,400 gr.

Regarding the involvement of other teachers, the project teacher needs to organise a team teaching so that the project implementation can run optimally, especially when holding workshops with parents. Many technical things need to be prepared, so working with other teachers will be very helpful and ease the process.

7. Dissemination

Dissemination was carried out by involving parents in ecobrick workshop activities. Teachers became resource persons, and students were assigned to become mentors to assist each parent in constructing ecobricks.

At the start of the session, each parent received information about the origins of plastic waste and was then given an overview of the plastic waste cycle, which was expected to stimulate awareness regarding the importance of protecting the environment to minimise the use of plastic waste. Next, students invited parents to learn to make ecobricks, accompanied by the teacher.

The dissemination has become a momentum in campaigning for various ways to reduce plastic consumption in everyday life through various student works such as short stories, illustrated stories, posters, and works using ecobricks, etc.

D. Kultum Afifah

The module entitled "Every Drop of Water Counts" aims at raising students' awareness of the water crisis as a local and global problem. By doing the project, it was expected that students transform their behaviour in using and conserving water. The teacher achieved such an expectation by involving her students in a series of activities, including mini research and experiments in her classroom, the grade 7 SMP (Public Middle School) 40, Central Jakarta.

1. Lesson Reports

a. The teacher recognizes her significantly increased competence in designing a project-based learning approach. This is important since every school in Indonesia is obliged to include a co-curricular project at least twice a year.

b. She also recognizes her increased knowledge of literacy and numeracy strategies in the context of GCED. The Indonesian government is currently striving to improve students' literacy and numeracy skills. Learning through projects has been the best way to improve creative and critical thinking skills.

c. The last thing she takes away is the importance of collaboration among teachers across the classrooms and between teachers and parents. As one of the expected outcomes is the behaviour change, making sure that the change is sustained is very important.

d. Students also learned to improve their thinking through participating in guided exploration activities. They also learned to observe the contextual problems in their surroundings and connect them to global issues.

e. Parents, on the other hand, were given the opportunity to be involved in their children's learning. They also started to do some initiatives to conserve the earth, such as planting trees at home, fixing waterways, as well as reducing water use at home.

f. This project also benefits the school as it secures the pathways to winning the National Adiwiyata Award - an award given to the school with the most eco-friendly environment. Upon the completion of the project, the school won the national award.

Figure 29. The National Adiwiyata Honor Awarded to SMP 40 Jakarta

2. Project Reports

This project is conducted in a planned series of activities as follows.

a. Introduction

At this stage, students were introduced to the concept of the water cycle and water crisis by exploring multimodal literature and resources.

b. Contextualization

In a period of some days, students conducted mini-research, studying water pollution through simple experiments; exploring data about the water crisis, conducting mini-research on daily water use, and formulating ways to do water conservation.

c. Action

The actions conducted by students included doing some campaigns to invite other people to take part in water conservation attempts. The campaign was done in public areas around schools in order to attract a wider audience. During this stage, students also created a simple water filter.

d. ***Reflection and Follow-Up***

Students were invited to reflect on the new understandings and lessons learned. They were also asked to list some things they should stop doing and some good practices they should maintain at school and at home related to better water use.

e. ***Presentation***

Students were to launch a campaign to the community members outside of schools to raise the water crisis awareness as well as ways to prevent it.

f. ***Final Reports***

All activities were conducted as planned with a minor adjustment. The adjustment included the addition of an activity, making a simple water filter, to respond to students' excitement.

a. In the introduction section, students familiarise themselves with the basic concepts of hydrology, such as water cycle, water pollution, and water conservation. After exploring information from various multimodal resources (books, digital articles, and videos), students synthesised and summarised the information.

Figure 30. Students Watching Videos Then Discussing the Information from the Videos

b. In the contextualization stage (the third activity), the students conducted three activities. The first one was a clean water examination by measuring the water's potential of hydrogen (PH). This determined whether the water was clean.

Figure 31. Students Measure the Water's PH

The second one was doing literature research concerning local, national, and global water crisis. The third one was collecting data regarding the daily water use at home. In presenting the data, the students used multiple data formats, so they also learned about the effective way of presenting statistical data. This activity increased their numeracy skills.

c. The action stage includes the activities in which the students developed an action plan to overcome the water crisis issues. Students came up with the idea of making a simple water filter and promoted this to the other classes and the community outside of school.

Figure 32. Students Making the Campaign Materials

Figure 33. Students Make a Simple Water Filter

d. In the reflection stage, students were assessed to measure the academic outcome as a result of their participation in the process. The assessment consisted of questions with multiple choice, short answers, and short essays that reflected their understanding of the hydrology concepts.

Figure 34. Students Did Written Test

e. In the presentation stage, they presented their reflections and findings of research to the other classes. The findings were organised in the format of campaign materials to be disseminated to all the school members as well as community members outside of school.

Figure 35. Students' Campaign for Wise Water Use

Throughout the process, the students were able to achieve outcomes in the three domains of GCED: cognitive, socio-emotional, and behavioural. Such achievements were seen in the ways students developed their awareness of the scarcity of water resources. In the social and emotional domain, students were also able to develop a conscience that access to water resources is often defined by social and economic status as well as the ownership of economic resources.

In addition, students transformed their behaviour in a way that was more responsive and responsible toward the water crisis problems. The significant impacts showed the growing awareness of their roles and responsibilities as citizens of the world.

3. Performance Analysis

The teacher observed some impacts on students' learning and behaviours. Some outcomes are as follows.

a. Observed outcomes on cognitive dimension include students' improved knowledge of basic concepts of hydrology. Additionally, their test scores have also improved.

b. Observed outcomes on behavioural dimension include students' changed attitudes in conserving water at school and at home.

c. Observed outcomes on socio-emotional dimension include the findings that students have raised awareness toward the social and economic factors surrounding the unequal access to water resources across the nation and around the world.

4. Challenges

As for the challenges, the teacher found that she needed to find more varied ways to help and guide students to explore the literature concerning the water crisis. While she found that students participated in the activities excitedly, many of them considered completing the worksheets a boring activity. The teacher then added teaching tips in her module to offer varied ways. For other teachers, they can modify some activities in her module.

5. Reflection

The teacher's reflective standpoints regarding the project are as follows.

a. Students need different approaches based on their interests and needs. Some students learned very quickly and got bored so fast that they needed more challenges. Teachers should have paid attention to this type of student.

b. Some students also demonstrated above-average curiosity when they decided to do their experiments. Teachers have to make sure that they manage these varied interests and curiosity well.

c. In responding to students' curiosity, extra energy, and unexpected excitement, Kultum made a class agreement consisting of what should and should not be done during the activities. Kultum also provided awards to students with cooperative and respectful behaviours.

d. In relation to students' curiosity, Kultum initiated an additional experiment considering a student's feedback, which was to make a liquid fertiliser out of collected raindrops.

6. Dissemination

Besides having students disseminate the awareness of water crisis issues as a global problem, the teacher also promoted the project to parents and asked them to participate. Parents' involvement was done with the purpose of making students' change of habits sustainable.

Figure 36. Parents were Informed about The Project and were Invited to Participate

Part 3. Conclusion

This program is considered successful in increasing teachers' ability to develop teaching modules that present problems related to GCED focused on the topic of global climate change through STEM (science, technology, engineering, and math) learning, which has implications for increasing literacy and numeracy skills in the Indonesian context. Following are the results of the analysis of the implementation of this program. It can be concluded that teachers benefit from several things, including:

1. Teachers gain knowledge, insight, and experience, as well as new perspectives, in integrating the GCED (Global Citizenship Education) concept to increase teacher competency and curriculum development in learning practices in schools.
2. Teachers also gain a perspective regarding GCED conceptually and practically and the learning system in South Korea, which can be adapted in Indonesia, especially efforts to integrate the GCED concept in the context of the SDGs (Sustainable Development Goals) in the curriculum and student learning practices in the classroom.
3. Teachers gain knowledge, insight, and experience in increasing teacher competency through integration and comprehensive assistance regarding GCED in the context of SGDs by preparing teaching modules and student worksheets, which represent the concept of GCED in the context of SGDs for two instructors (elementary school teachers) and two instructors (junior high school teachers), in supporting the learning design of the Strengthening Pancasila Student Profile Project.
4. This program has implications for increasing student competency in terms of the three GCED domains, namely cognitive, socio-emotional, and behavioural aspects as follows.
    a. In the cognitive aspect, students have broader knowledge about global climate change. Students also deepen their understanding of climate change as both local and global issues. Most importantly, students improved their reading literacy, science literacy, and numeracy skills, as indicated by their increased post-test scores compared to the pretest scores in SMP 40 Jakarta.
    b. Students develop social and emotional competence as well as grow more awareness regarding various environmental issues. For example, students grew empathy and were able to conclude that the issue of water scarcity is well linked to the gap between the rich and the poor.

c. Furthermore, in the behavioural aspect, students are slowly changing their lifestyle and becoming aware of the environment. Students also became more aware that their local acts may contribute to global issues. For example, they start reducing their daily plastic use, start to use water bottles, and finish their lunch meals.

The implementation of literacy and numeracy teaching modules that integrate GCED in four schools facilitated by the teacher participants has induced changes in students' cognitive, social, emotional, and behavioural aspects. GCED projects focusing on global climate change have provided students with direct experiences in which students learn, research, gain new understanding, synthesize, and analyse information from multiple resources as well as interacting with the environmental actors and activists. In addition, students conducted experiments and created new things using the 4R principles. They also disseminated their new understandings in campaigns to raise the environmental awareness of the school and community members.

With the variety of literacy and numeracy strategies that develop critical, analytical, and creative thinking, students raise awareness as community and global citizens. They comprehend and gain new knowledge concerning the environmental issues around them. In the process, they develop empathy and commitment in making changes. The changes do not only take place in school, but also at home with the support of parents.

This is due to the fact that teachers involve parents not only to attend student's works in exhibitions. Parents were also invited to support students' changes at home such as reducing the use of plastic, planning healthy meals, eliminating food waste, as well as using water wisely.

The small steps initiated by the four modules are certainly not the end of the road. Further activities and continuing programmes need to come into being as a shared commitment enabled by the stakeholders' supports, including the government. Only strong and continuous collaborations can turn small actions into real and greater impact which further make the world a better place.

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