



TECHNIUM
SOCIAL SCIENCES JOURNAL



Vol. 56/2024
A New Decade for Social Changes

PLUS
COMMUNICATION



International
Communication & PR

The Contribution of Christian Religious Education (CRE) in Achieving Sustainable Development Goals (SDGs) Through a Problem Based Learning Approach - 4A Cycle Model

Wahju Astjarjo Rini, Gracia Paramitha, Yonatan Alex Arifianto, Carolina Etnasari Anjaya, Christian Adi Jaya

Sekolah Tinggi Teologi Ekumene, Jakarta, Indonesia

wahyuarini@sttekumene.ac.id, gracia.paramitha09@ui.ac.id,
arifianto.alex@yahoo.com, Carolina.anjaya@gmail.com,
christian.adi@sttekumene.ac.id

Abstract. Sustainable Development Goals (SDGs) has been an important focus and a common goal for all humanity. Degradation of nature is a concern and responsibility for all areas of life, including education, which is a fundamental factor in developing the quality of human life. In this regard, the aim of this research is to provide some ideas for Christian Religious Education (CRE) at the higher education level in supporting the achievement of the SDGs. This research was conducted by in a qualitative descriptive method. As findings, it is found that the contribution of CRE can be made through Student Centered Learning approach, Inquiry model - problem based learning. This approach is carried out through learning practical matters with stages of achieving targets, which are referred to as the 4A cycle model (Awareness, Action Plan, Actualization and Assimilation).

Keywords. Christian Religious Education; environment; Sustainable Development; lecturer motivation; Student Learning Center; SDGs

Introduction

The launch of Sustainable Development Goals (SDGs) is a proof of the world community's concern for the quality of life of humans and a proof of degraded planet Earth in various aspects. For example, an environmental or natural crisis occurs continuously and unexpectedly. This matter has now become an important focus of attention so that it often becomes the main news both in online and offline media. The problem of environmental problems clearly indicates that the earth is experiencing ecological damage. The environmental damage that occurs has an impact on all living creatures on earth. In this case, humans are not only victims of these impacts, but also as one of the causes of ecological damage.[1] Humans have a big role in determining the condition of the earth but are also the main ones who receive the impacts.

Paying attention to the environmental problems, environmental education is an answer as well as an effort to reduce the impacts caused. These impacts include, for example, global warming and climate change. Environmental education is a process of recognizing values and

clarifying concepts to develop the skills and attitudes necessary for understanding and respecting relationships between humans, their habits and their biophysical environment. Environmental education also requires practice in decision making and self-formulation of codes of behavior in relation to the environmental quality issues.[2] Therefore, the role of Christian Religious Education (CRE) in this case is very important because it is related to life values, human relationships and behavior. Through Christian Religious Education (CRE), especially at the higher education level, it is hoped that it can lead to achieving the goals of the Sustainable Development Goals (SDGs) program because these goals are closely related to the interests of the lives of the young generation in the future. With the characteristics of the current generation, students have the opportunity to achieve innovation, creativity and improve the quality of life more optimally. Apart from that, students are a productive generation who can determine the quality of the future of themselves, their families, society and the earth.

In reality, the involvement of students or the younger generation in the Sustainable Development Goals (SDGs) program is experiencing serious challenges. There is a wrong perception from society or adult groups that students lack concern for the environment. There are also various negative stigmas about students who are considered only able to theorize and are passive, which makes them reluctant to make real contributions to sustainable development. Another opinion argued that students do not have the maturity to think, thereby forming fundamental errors in their perspective about themselves, nature and the relationship between the two. Therefore, what is needed now is a fundamental and revolutionary change regarding the transformation of perspectives and values, both personally and culturally, which has the effect of reawakening ecological concerns, the interconnectedness and interdependence between humans, plants and animals and the entire universe.

This is an absolute fact, especially if you look at the reality of Indonesia's natural conditions, which are not in good condition. According to the Ministry of Environment and Forestry, Indonesia's waste production has increased from year to year, reaching 67 tonnes in 2017. In relation to the marine data, the Indonesian Scientific Institution (LIPI Oceanography Center) notes that around 35.15% of coral reefs in Indonesia are in poor condition and only 6, 39% in excellent condition. Global warming happens due to burning coal with emissions of 9 billion tons of CO² per year. Land conversion and forest destruction with total emissions of around 2.53 billion tons of CO²e; and activities from energy use, agriculture and waste with emissions reaching 451 million tons of CO² (Krismawati, 2020, 240). This situation requires an immediate treatment for the quality of human life and the earth in the future.

Many previous studies discussed the Christian Religious Education (CRE) and responsibility for caring for nature have been compiled. One of them was by Samosir, Christina, Boiliu, and Melkias who raised the theme of CRE as an answer to the environmental crisis. [4]. This research discusses environmental damage, the world is already in a state of emergency, so the concrete action is immediately needed from all of society. The conclusion obtained is the need to raise human awareness of the state of nature. In this case, CRE can be done through teaching in families, schools and churches in order to give birth to a generation that cares about the environment.

Another article by Simon on the main topic of the role of CRE in ecological issues. In this article, Simon states firmly that CRE educators as moral administrators are required to contribute to raising students' awareness of ecological issues. The article concludes that educators in CRE need to develop creativity and do this continuously in providing teaching related to ecological problems.[5].

Bearing in mind that there is no research that specifically examines the concrete contribution of CRE at the higher education level to the SDGs program, this research was carried out in order to provide suggestions or ideas for CRE educators at the higher education level in contributing concretely to the program. It is hoped that the results of this research can guide educators to produce a young generation - students who care and play an active role both nationally and internationally in making the SDGs program successfully. Through this contribution, students are expected to be able to actualize their faith through real actions for themselves, others and the universe to fulfil their responsibilities as holders of God's mandate.

Research methods

The method of this research is qualitative, considering that the discussion in this research was carried out by exploring and explaining how the contribution of CRE plays a role in achieving the SDGs. This is in line with Sugiyono's concept of qualitative methods as a method used to examine the condition of a natural object (as opposed to an experiment). Apart from that, in this method, the researcher is the key instrument or research tool.[6] The analytical approach used in this research is descriptive because this research describes the current natural situation in detail and the solutions that can be provided through CRE. As the data collection, there are some literature studies, researchers collect data or sources related to environmental topics, Christian education and SDGs. This literature study can be obtained from various sources, namely: journals, books, documentation, and the internet. The discussion begins by describing Indonesia's natural conditions, which is then continued with alternative solutions through education. The next discussion of the CRE context is that achieving the SDGs can be done with appropriate learning strategies and methods. This is the core and conclusion of this research.

Discussion

Current Conditions of Indonesia's Natural Environment

The current natural condition of Indonesia is not in a good condition. This is proven by various data obtained, one of which comes from the Central Statistics Agency (BPS) which recorded data sourced from the Police of the Republic of Indonesia that the number of vehicles recorded until 2021 is 141,992,573 vehicles.[7] This condition creates air pollution problems. Data on deaths due to air pollution reaches more than 165,000 people. Data on forest fires until 2020 throughout Indonesia from 34 provinces totaled 206 751.00 (ha). Percentage of Villages by the type of environmental pollution throughout Indonesia from 34 Provinces from 2014-2018: water pollution in 2014 10.69% until 2018 increased to 25.11%, land pollution in 2014 1.58% until 2018 increased to 2.69%, air pollution in 2014 increased 14.60% until 2018 to 11.83.[3]

This situation is very critical because Indonesia, as the largest archipelagic country in the world, has rich natural resources (SDA). This fact is a strength, namely having the third largest tropical forest in the world, which is useful as the world's lungs after Brazil and Congo. According to the World Bank records, Indonesian forests have high biodiversity. Forest problems in Indonesia are related to deforestation and illegal logging, and forest fires have contributed 20% of carbon emissions in the world.[8] Indonesia is one of the largest archipelagic countries which has 17,000 islands with an ocean area of 3.25 million km² and an Exclusive Economic Zone of 2.55 million km². Another strength is that Indonesia has a coastline of 99,093 km², with mangrove forests covering an area of 3.4 million hectares and

the largest forest area in the world, namely 120.3 million hectares.[8] Around 17% of this area is conservation forest and 23% is protected forest, while the rest is production forest.

Indonesia is also one of the richest countries in biodiversity with around 10% of all plant species in the world, 12% of mammal species (the most in the world), 16% of reptiles and amphibians, 17% of bird species and more than 25% of fish species in the world . Almost all of these species are endemic or do not occur in other countries.[8] However, with these strengths on the other hand, Indonesia's forestry received serious attention and was highlighted at UNFCCC/COP 21, especially the problems of haze and illegal logging. From the total of 3.4 million hectares of mangrove forests in coastal areas, around 1.8 million hectares are in a damaged condition. Most of the damage is caused by abrasion, sand mining, reclamation, infrastructure projects and the development of special economic zones. The Ministry of Environment and Forestry (2020), recorded that 29 thousand hectares of land were lost on the north coast of the island of Java. Rising sea levels due to climate change threaten coastal areas and small islands. One proof of this threat is found in the 2019 WALHI South Sumatra records, namely that 2 small islands are sinking (Beet and Gundul Islands) and 23 other small islands have the potential to sink due to climate change. [9]

Climate change is the cause of global warming, and this is also influenced by the various back-effect processes it produces, such as water evaporation. This problem causes the greenhouse effect it causes to be greater than the effect of CO² gas itself. This reverse effect is an event that can increase the absolute water content in the air, but the relative humidity of the air is almost constant and also decreases somewhat as the air warms. Considering that CO² has a long life in the atmosphere, this reverse effect can slowly be reversed.[9] This has become a global concern so that from 30 November to 12 December 2015, a conference was held to address climate change, or the 21st Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC)/COP which resulted in the "Paris Agreement" (Paris Agreement), with one of the cores being an emissions reduction target. UNFCCC members agree and are committed to preventing an increase in world climate temperatures, to maintain balance by 2050. [10] The role played by member countries is to shape values, norms, transparency, participation, accountability as well as various accesses in global environmental decision making towards 2020- 2030.

Human Responsibility to the Earth Based on the Bible

God created humans in His image (Gen. 1:26-28). Humans are given the mandate to rule over other creatures of His creation and are obliged to devote themselves completely to God. Based on this mandate, humans are actually required to live fully for the achievement of God's noble vision.[11]. The Bible's testimony on this matter begins with a description of the creation of the heavens and the earth and everything in them, including humans (Gen. 1-2) then ends with a testimony stating that God will renew his creation in a new heaven and a new earth (Rev. 21-22) . Based on this testimony, the Christian faith acknowledges that only God, God, is the sole ruler, the source of all things and the cause of all things happening. [12] Therefore human life should belong only to Him.

God created the garden of Eden for Adam, placing it in order to cultivate and maintain it (Gen. 2:15). Adam carries out work duties (avodah) which is a natural activity where managing the Garden of Eden brings sham'rah, namely comfort or pleasure. Avodah can be compared to the word worship, which is a loanword from its cognate language, namely Arabic [12]. In connection with the basic purpose of this creation, Howard Gardner in 2000, added a new category of intelligence, namely intelligence and consciousness which involves

understanding, observing and organizing the environment. This ability involves sensitivity to the existence of nature, plants and animals, observation of natural phenomena like an environmental activist and nature lover[Ibid].

According to the book of Genesis, humans are in the sixth order of creation, they are part of creation, but humans have also been given a special position in it. This privilege is based on the image and likeness of God, that is, having the capacity to take responsibility and carry out cultural mandates. Genesis 1: 28 says, "Be fruitful and multiply, fill the earth and subdue it, have dominion over the fish of the sea and the birds of the air and over every animal that moves on the earth." This verse is often perceived as "conquer" and "rule" as an exploitative relationship between humans and nature[13]. In this verse, there is a unique role for humans among other creations, namely care and responsibility in managing the earth.

The world is God's creation. This universe had a beginning (Gen. 1:1), where Christians believe that creation was *ex nihilo* (from nothing). Teaching about creation has several important implications for the environment. God owns the universe and everything in it and humans are commanded to look after the earth for Him (Ps. 24: 1; Job 41:2; Ps. 50:10, 12). The world is bound by God's covenant. God's covenant with Noah (Genesis, 9:16), humans as custodians of the environment. Humans have three basic obligations to the environment, namely: one, multiply and fill the earth; two, conquer the earth and rule over it; and three, cultivating and caring for the earth (Genesis 1: 28; 2: 15).[13] From this description, the Bible clearly conveys that humans and nature cannot be separated. Human existence is to manage nature, and nature's existence is for human welfare.

Education as the Effort to Achieve SDGs

The Sustainable Development Goals (SDGs) is a global action plan agreed upon by world leaders since 2015, including Indonesia. This global agreement aims to end poverty, reduce inequality and protect the environment. Compared to the previous Millennium Development Goals (MDGs), the SDGs were designed to involve all development actors, including government, Civil Society Organizations (CSO), private sector, academics, and so on. "Leave no one behind" is the main principle of the SDGs. In other words, the SDGs goals can be achieved if there is multi-party collaboration in knowledge, expertise, technology and resources.[14] SDGs have 17 goals including goals of no poverty-hunger, healthy and prosperous life, quality education, gender equality, clean water and adequate sanitation, clean and affordable energy, economic growth, handling climate change, sea-land ecosystems and several other important issues.

Sustainable Development Goals (SDGs) as a global development agreement, were officially ratified on September 25th 2015 at the headquarters of the United Nations (UN). Heads of state from 193 countries attended, and Jusuf Kalla as Vice President of Indonesia at that time, also ratified the SDGs agenda. With the theme "Changing Our World", the SDGs contain 17 goals and 169 targets of a global action plan for the next 15 years which are valid from 2016 to 2030. The main agenda is to end poverty, reduce inequality and protect the environment. The SDGs apply to all countries (universally), so that all countries without exception have a moral obligation to achieve the goals and targets of the SDGs [15]. The support of the UN as an international organization for this sustainable development program proves that the important issues contained in it are placed globally and become a priority by the majority of the world's people.

Indonesia along with the other countries have agreed to support the SDGs to end poverty, reduce inequality and protect the environment [16]. The SDGs record data on people's

lives starting from economic, health, environmental, educational, religious, socio-cultural aspects and will later update the latest data related to society village. This data is from the family level, community level, up to the village level. This data is then processed and analyzed, according to SDGs principles, so that real data on the condition of a society is obtained[16]. From the real conditions in the field, the SDGs villages then recommend what kind of development and empowerment is suitable and appropriate to be carried out in a community in accordance with the results of the SDGs analysis in the field.

Therefore, SDGs can be said to be concrete solutions to various current world problems, especially to the environmental problems because they are based on concrete data on the conditions and needs of society in the field. The SDG concept is based on human rights and equality to encourage social, economic and environmental development [17]. In the SDGs, there are 6 goals that are directly related to environmental sustainability, including the provision of clean water and sanitation, affordable energy, sustainable consumption of natural resources, climate change, life underwater, terrestrial ecosystems, stopping the loss of biodiversity and combating land degradation and desertification [18]. This opinion confirms that currently an ecological crisis on earth has occurred.

Robert P. Borrong, quoting Paul Albercht's opinion, stated that the ecological crisis started and the development of rationalism which separated science from religion, this has started since the Middle Ages. Borrong also explained that the pioneers of rationalism such as Francis Bacon, Descartes, and Spinoza had succeeded in separating science and theology (religion). The peak occurred in the 18th century, when science, through its own path in the footsteps of pure rationalism, led humans to have the opinion that reason is the only measure of human behavior, both towards each other and towards nature. Since then, nature has been used as an object for human interests [12]. This increased after the enlightenment period around the 17-18 century. Until now, the philosophy of rationalism, empiricism and other currents has become the "commander" or "leader" in opening up opportunities for the development of science and technology. However, science and technology are actually manifestations of cultural mandates (Gen. 1:28).

After the fall of humans into sin, humans continued to carry out cultural mandates as written in Genesis 3:1-24. God created everything, but there was rebellion and man's fall into sin. Christ redeems the people, and God's plan for His coming. A grand story of God in Creation, Fall, Redemption, and Consummation. The Bible presents the worldview contained in the story line presented in the Bible [19]. Based on a hermeneutical study from the perspective of a redemptive historical approach, the expression "very good" in Genesis 1:31 has historical meaning. Judging from the eschatology of Christ's redemption, this expression is the beginning of history which progressively - after the fall of man into sin - also acts as the beginning and final goal of redemptive history. The phrase "very good" is the ultimate goal/ultimate quality of all creation that Christ has redeemed. Christ's redemptive work returns the quality of creation to its original state, as God intended from the beginning[20]. This means that humans bear the mandate to return the quality of the earth and its life to its original purpose of creation. Humans' duties to manage nature are carried out in many aspects, including through education.

As a vehicle for internalization and transformation, education is the right path to carry out efforts to return the quality of nature and humans to their original state. Globally, there are 5 environmental education goals agreed upon after the meeting in Tbilisi 1977 by the international community, namely: first, in the field of knowledge, helping each individual to gain various experiences and knowledge about what is needed to manage, create and maintain a sustainable environment. Second, in the field of awareness, it helps every individual to gain

comprehensive awareness and sensitivity to the environment and its environmental issues and problems. Third, in the field of behaviour, it helps each individual to acquire a combination of norms and values of concern and motivation to actively participate in improving and protecting the environment. Fourth, in the field of skills, it helps each individual to gain skills to be able to anticipate, identify and prevent environmental damage. Fifth, the field of participation provides space, opportunity and motivation for each individual to be actively involved in creating a sustainable environment [21].

Referring to the five objectives, environmental education is implemented through a series of stages. Of these stages, the most important thing is to foster human awareness of the environment, considering that awareness is a state where a person's soul is consciously awakened to something. Such a mental state will encourage thoughts and behaviour so that it can be stated that environmental awareness is the driving force of thoughts and behaviour towards the environment [22]. Environmental awareness is an in-depth understanding of environmental problems, as well as solving problems in them. In this way, a strategic plan can be prepared to save the environment. Growing awareness of the environment requires a process that is not instant, from just having knowledge about the environment (theory) then it becomes an attitude and from that attitude it then becomes a conscious action to protect the environment.

Building a lifestyle and attitude towards the environment so that you live in harmony with the environment is not an easy job and can be done in a short time. Therefore, education is the right means to build a society that applies the principles of sustainability and environmental ethics[23]. Paradigm changes in elements of life, especially in education, are believed to be a necessity in order to take into account the development of environmental sophistication and as a strategic-ideological effort to increase understanding capacity which in turn can form a new awareness that favors ecosystem balance [24]. Self-awareness can begin with an understanding of human nature, the purpose for which humans were created, and how they should live their lives. At this stage, understanding and training is provided to have awareness as a created being who has the responsibility to live life for God and others [25]. This learning provides understanding and awareness to fulfil the responsibility as the holder of God's mandate to manage and maintain the universe. Therefore, the main aspect that encourages the element of self-awareness in a human person is the spiritual aspect.

Contribution of Christian Religious Education (CRE) in Achieving SDGs

Christian Religious Education (CRE) is education that is centred on God and as a means of expressing faith to uphold the kingdom of God in the world. Through a teaching approach that prioritizes the characteristics of Christian religious education (CRE), students will have personalities like the Lord Jesus, develop talents and a dynamic spiritual life, and especially the growth of personal relationships with God (John 17:3) and God's creation. The main goal of CRE is to preach the Kingdom of God in Jesus Christ so that the practical guidance in it comes from Christ. Therefore, spiritual aspects become the focus in Christian religious education.

As the spirituality becoming the focus of the education, it can be stated that the essence of CRE is a teaching process which aims to bring students to a real encounter with God so as to produce thought patterns and behaviour that are in accordance with the teachings of the Bible [26]. In fact, life is such an education because it is a human effort to improve the quality and standard of life, through gaining a life learning experiences [27]. In the context of the environment, through CRE, learning can be realized to preserve the world's natural resources, caring for the earth, especially in the face of global warming and climate change, so that future generations not only meet their own needs but can realize a sustainable life.

The concept of teaching and learning activities in CRE that has an environmental perspective can be carried out through the integration of subjects. There are several theological foundations for the CRE as the basis for an approach to human relations towards nature that can be taught in schools, namely: one: imago dei model, two: organic model, three: panentheism, four: kenosis theology, and five: Holy Spirit theology. These five models are used to analyze the movement of human thought towards nature. [28] In line with this opinion, Francis Bacon (1561-1626), an English philosopher, stated that Knowledge is Power. Bacon believed that education produces knowledge that can be a force in influencing life.

For example, through the implementation of learning in 21st century higher education, it is possible for graduates to have high levels of cognitive abilities, motivational or self-management skills and practical technical skills, for example being able to overcome environmental problems. With these abilities and skills, students will be able to compete and adapt to the demands of current developments. In fact, the cognitive abilities or knowledge produced by a person are awakened by awareness, both of the environment itself and of life. As according to Hastjarjo, awareness has implications for the ability to provide perception, the ability to communicate with others and the environment in an integrated manner[29]. In an ecological context, this awareness is still very rare to find in the world of education. This is indicated by the lack of Christian literature and seminar themes related to ecology [30]. Therefore, Christian education needs to make a real contribution to raising ecological issues as priority material by focusing on raising students' awareness, especially at the higher education level.

Growing awareness at all levels of education cannot be instantaneous considering that awareness is level and resides in a person's mental area [29]. Examining this statement, it becomes clear that raising awareness is the domain of CRE. This is in accordance with the essence of CRE as a means of bringing students together with God. The impact of this encounter makes students understand the nature of themselves and therefore one of them can become a critical thinker based on God's wisdom in dealing with life's problems [31], including taking responsibility for various ecological problems in it.

Christian Religious Education (CRE) in higher education has a strategic position in forming character and in guiding a student to develop his or her personality. Furthermore, discussing environmental issues in CRE learning will be a contribution in implementing sources of values and guidelines for church, community and state life. Entering the 21st century requires a fundamental change in the higher education paradigm

With this description, it can be understood that the SDGs goals can be successfully achieved through CRE, especially at the higher education level. If the learning process in CRE in higher education is implemented correctly, it will give birth to a productive generation who have full awareness of their responsibility for improving the quality of human life and caring for the earth and are able to actualize it concretely in life.

Problem Based Learning (PBL) Approach for Achieving SDGs

The Student Center Learning (SCL) approach is a learning approach that empowers students to become the center during the learning process. In one study, students' perceptions of the learning environment and positive interpersonal relationships with lecturers were the most important factors that strengthened student motivation and achievement [32]. One example of a learning model from the Student Centered Learning approach is Problem Based Learning (PBL). PBL or problem-based learning is a learning model that involves students solving problems through the stages of the scientific method so that students can learn

knowledge related to the problem and at the same time have the skills to solve problems [33]. PBL is learning that uses real world problems as a context for students to learn critical thinking and problem-solving skills, as well as to gain essential knowledge and concepts from the subject matter.

In accordance with the higher education system in Indonesia, the PBL model contains four main stages including: input, process, output and outcome. These four main stages are the basis for implementing PBL, which in its implementation becomes a series of cycles. In accordance with the essence of CRE and education in general, namely as lifelong learning, the cycle formed in the PBL model applied to achieve the SDGs is valid throughout life. According to its stages, this cycle can be referred to as cycle 4A (Figure1).

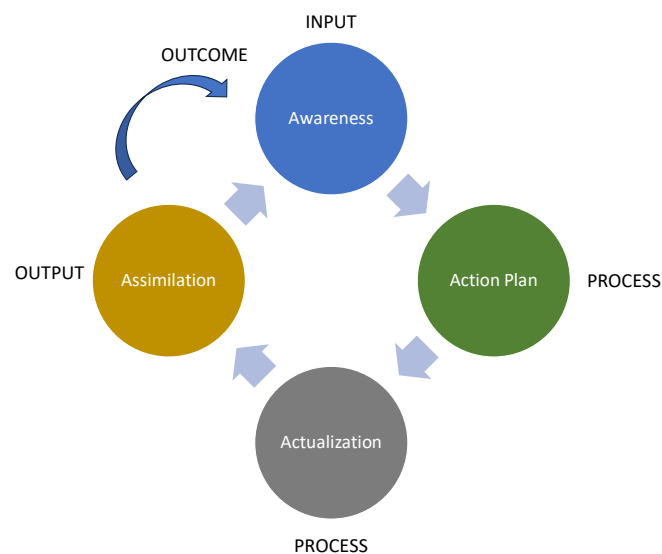


Figure 1. 4A Cycle

The Problem Based Learning (PBL) learning model applied forms a "4A cycle" namely: Awareness, Action Plan, Actualization and Assimilation. These four things can also be called activity targets or achievement targets for the PBL model applied to achieve the SDGs. The first stage A, namely Awareness, mental thoughts are input. The second stage A is Action plan (action plan) and the third A is Actualization (actualization in the form of activities). Action Plan and Actualization are process stages in the PBL model cycle. The fourth A is Assimilation (assimilation – a culture of environmental care) which is the output in the PBL model. The long-term final result (outcome) is permanent awareness (awareness). It is hoped that this process will continue throughout the lives of students and subsequent generations.

At the Awareness stage, learning aims to foster mental and mental awareness regarding the nature of oneself. PBL can be carried out through in-depth discussions about human nature by exploring actual events or phenomena that are currently occurring. Before the discussion is held, a presentation can also be held on the same topic, namely human nature and phenomena that are currently occurring in the world. In accordance with the realm of CRE, the discussion is of course based on Biblical teachings related to the problem theme. This stage is an input in the cycle of learning stages and is the basis of the process because by having an awareness of

responsibility towards the natural environment, students will be moved or motivated to make real efforts.

At the Action Plan and Actualization stages, Problem Base Learning (PBL) model learning can be carried out by involving a small group of students (8-15 people/group) in group discussions guided by a tutor/facilitator and resource person. A problem is given at the beginning of the group discussion in the learning process. Usually problems are given in written form, containing phenomena that require explanation. "The Seven Jumps from Schmidt" are steps commonly used in the PBL method. These steps are: one, clarifying terms and concepts that are not understood in the group. Two, determine the problems. Three, analyze the problem (brainstorming) to find a description of the problem. Four, formulate a hypothesis. Five, determine learning objectives. Six, collect information independently from various sources. Seven, reporting the results of group learning, compiling explanations and applying knowledge gained from independent study to explain existing problems to get grades.

At the action plan and actualization stages, students are taught to process by drawing up plans or work programs while actually actualizing them. In this way, students will truly understand existing problems, learn to find solutions, find the best solutions in overcoming environmental problems. The Problem Based Learning approach is based on a complex curiosity process with students formulating questions; investigate to find answers; build understanding; new meaning and knowledge; and emphasizes inquiry-based learning involving students actively to solve their daily (real life) problems.[34] This will foster student habituation to live responsibly in managing the universe to fulfill God's cultural mandate.

The Problem Based Learning model can also be carried out through project activities. One option is Service Learning (SL) activities. In learning, service learning is a strategy that is expected to lead students to become human beings who are useful to others. Specifically in the context of achieving sustainable development, SL aims to enable students to serve others by increasing awareness. The spirit of service ideally develops along with a person's level of education or depth of experience, but the spirit of service cannot be simply possessed if this is never introduced to students [35].

At the actualization stage, a nature restoration program can be carried out through tree planting. Through this activity, students participate directly in ecosystem restoration efforts, where one tree can produce 1.2 kg of oxygen per day. One person to breathe requires 0.5 kg of oxygen per day, so it can be analogous to 1 tree to support the lives of two people. Other functions of trees, apart from producing oxygen, are also as microclimate regulators, pollution absorbers, animal pathways, water reservoirs, also related to economic and aesthetic needs, not littering, calculating personal and group water footprints, calculating personal and group carbon footprints. for one week, then the results are presented and discussed in class [36]. The following are the results of carbon footprint data collection that students can carry out (Figure 2).

No.	Jenis produk	Estimasi perhitungan jejak air	Catatan
1.	Nasi/beras	2.497 liter/kg	69% green, 20% blue, 11% grey
2.	Roti (gandum)	1.608 liter/kg	70% green, 19% blue, 11% grey
3.	Mentega	5.553 liter/ kg	85% green, 8% blue, 7% grey
4.	Kemeja katun	2.495 liter untuk kemeja seberat 250gr	54% green, 33% blue, 13% grey
5.	Pasta makaroni	1.849 liter/kg	70% green, 19% blue, 11% grey

Sumber: waterfootprint.org

Figure 2.

Tabel. Jejak Karbon dari setiap Alat Elektronik yang Ada di Rumah Tangga

Alat elektronik	Emisi (Kg CO ₂)
Lampu	27,3564
PC	55,25
AC	346,256
Printer	1,0846
Kipas Angin	3,06
Dispenser	4,08
TV	4,488
Proyektor	15,606

Sumber : *Jurnal Rekayasa Lingkungan*, Identifikasi dan Analisis Jejak Karbon (Carbon footprint) Dari Penggunaan Listrik di Institut Teknologi Yogyakarta

Table 1.

At the assimilation stage, students as groups or individuals can be given the task of making various efforts to influence the surrounding environment so that they actively contribute to the success of the SDGs so that this becomes a culture. Assimilation is the mixing of cultures accompanied by the loss of the characteristics of the original culture, so the movement or program launched to achieve the SDGs should be able to become a new culture from a culture of indifference towards the environment to a culture of concern. With the new culture, it is hoped that it will encourage society, especially the next generation, to automatically have awareness of the care of the universe in accordance with the cultural mandate that God has commanded.

Conclusion

CRE in higher education is required to actively contribute to achieving the SDGs. Learning that supports this can be done through a Student Centered Learning approach, the Inquiry - Problem Based Learning model. This learning approach is actualized through four main stages, each of which contains achievement targets. These four stages are called the "4A cycle" which consists of the stages: Awareness, Action Plan, Actualization and Assimilation. These four things are actually the achievement targets of the PBL model of learning which is applied to fulfill the SDGs, namely starting with the birth of awareness in students regarding the responsibility for managing the earth (cultural mandate). This awareness will encourage students' active role and ends with.

References

- [1] W. Amatus, *Menyapa Bumi Menyembah Hyang Ilahi, Dalam Buku "Manusia Dan Lingkungan Dalam Persekutuan Ciptaan."* Yogyakarta: Kanisius, 2008.
- [2] J. A. Palmer, *Environmental Education in the 21st Century Theory, Practice, Progress and Promise.* New York: Routledge, 1998.
- [3] Krismawati, Nanik Supriyanai, and Chryssanti Widya, *Statistika Lingkungan Hidup Indonesia*. Jakarta: Badan Pusat Statistika, 2020.
- [4] Samosir, Christina Metallica, Boiliu, and F. Melkias, "Pendidikan Agama Kristen Sebagai Upaya Menjawab Tantangan Krisis Lingkungan Hidup," *Edukatif: Jurnal Ilmu Pendidikan*, 2022.
- [5] S. Simon, "Peranan Pendidikan Agama Kristen Menangani Masalah Ekologi," *EDULEAD: Journal of Christian Education and Leadership*, vol. 2, no. 1, pp. 17–35, 2021, doi: 10.47530/edulead.v2i1.60.
- [6] Sugiyono, *Statistik untuk Penelitian*. Bandung: Alfabeta, 2016.
- [7] Badan Pusat Statistik Indonesia, "Perkembangan Jumlah Kendaraan Bermotor Menurut Jenis (Unit), 2019-2021," <https://www.bps.go.id/indicator/17/57/1/jumlah-kendaraan-bermotor.html>, 2022.
- [8] G. Paramitha, *Risalah Rimba Riau dan Masa Depan Hutan Indonesia*. Jakarta: Friedrich Naumann Stiftung für the Freiheit, Freedom Institute, 2016.
- [9] Nur Hidajati, *Tinjauan Lingkungan Hidup 2020: Menabur Investasi, Menuai Krisis Multidimensi*. Jakarta: Eksekutif Nasional WALHI (Wahana Lingkungan Hidup Indonesia), 2020.
- [10] G. Paramitha, *Diplomasi Indonesia dan Tantangan Tata Kelola Lingkungan Global*. Jakarta: Senat Alam Media, 2016.
- [11] Y. S. E. Ngesthi, C. E. Anjaya, and Y. A. Arifianto, "Merefleksikan Prinsip dan Tanggung Jawab Kepemimpinan Adam dalam Kepemimpinan Kristen: Kajian Biblis Kejadian 2-3," *Jurnal Teruna Bhakti*, vol. 3, no. 2, pp. 146–156, 2022, [Online]. Available: <http://stakterunabhakti.ac.id/e-journal/index.php/teruna/article/view/112/47>
- [12] R. P. Borrong, *Etika Bumi Baru*. Jakarta: BPK Gunung Mulia, 2009.
- [13] R. Naylor, *Theology of Creation" dalam Land and Moore (ed.). The Earth is the Lord's: Christians and the Environment*. Nashville: Broadman Press, 1992.
- [14] Firdaus Cahyadi, Bona Tua Parlinggomon, and Denisa Amelia Kawuryan, *Panduan Pelibatan Anak Muda dalam Aksi Tujuan Pembangunan Berkelanjutan*. Jakarta: INFID, 2021.
- [15] A. O. Safitri, V. D. Yuniarti, and D. Rostika, "Upaya Peningkatan Pendidikan Berkualitas di Indonesia: Analisis Pencapaian Sustainable Development Goals (SDGs)," *Jurnal Basicedu*, vol. 6, no. 4, pp. 7096–7106, Jun. 2022, doi: 10.31004/basicedu.v6i4.3296.
- [16] Bappenas, "Sekilas SDGs," *Kementerian PPN- Bappenas*, 2023.
- [17] S. A. Nurfatimah, S. Hasna, and D. Rostika, "Membangun Kualitas Pendidikan di Indonesia dalam Mewujudkan Program Sustainable Development Goals (SDGs)," *Jurnal Basicedu*, vol. 6, no. 4, pp. 6145–6154, May 2022, doi: 10.31004/basicedu.v6i4.3183.
- [18] N. K. Arora and I. Mishra, "United Nations Sustainable Development Goals 2030 and environmental sustainability: race against time," *Environmental Sustainability*, vol. 2, no. 4, pp. 339–342, Dec. 2019, doi: 10.1007/s42398-019-00092-y.
- [19] K. Y. Tung, *Terpanggil Menjadi Pendidik Kristen Yang Berhati Gembala*. Yogyakarta: Andi Offset, 2019.
- [20] J. L. P. Purba, H. F. Prastowo, and R. Rimun, "Kajian Hermeneutis Ungkapan 'Sungguh Amat Baik' dalam Kejadian 1:31 Ditinjau dari Perspektif Redemptive-Historical

- Approach,” *CHARISTHEO: Jurnal Teologi dan Pendidikan Agama Kristen*, vol. 1, no. 2, pp. 122–133, Mar. 2022, doi: 10.54592/jct.v1i2.14.
- [21] N. K. Supadmini, I. K. Wisnu Budi Wijaya, and I. A. D. Larashanti, “Implementasi Model Pendidikan Lingkungan UNESCO Di Sekolah Dasar,” *Cetta: Jurnal Ilmu Pendidikan*, vol. 3, no. 1, Feb. 2020, doi: 10.37329/cetta.v3i1.416.
- [22] Greeneration Foundation, “Meningkatkan Kesadaran Lingkungan untuk Bumi yang Lebih Baik,” <https://greeneration.org/publication/green-info>, Apr. 01, 2021.
- [23] Y. H. Adisendjaja, “Bagaimana Mengajarkan Pendidikan Lingkungan Hidup?,” Skripsi, UPI, Bandung, 2012.
- [24] A. Hidayat, “Pendidikan Islam dan Lingkungan Hidup,” *Jurnal Pendidikan Islam*, vol. 4, no. 2, p. 373, Dec. 2015, doi: 10.14421/jpi.2015.42.373-389.
- [25] S. Hudianto, K. Stevanus, and C. E. Anjaya, “Transformasi Pendidikan Futuristik Melalui Konstruksi Masyarakat Pancasila sebagai Implementasi Pendidikan Multikultural: Sebuah Perspektif Kristiani,” *Jurnal Teologi Berita Hidup*, vol. 5, no. 2, pp. 329–346, Mar. 2023, doi: 10.38189/jtbh.v5i2.375.
- [26] D. Wasari, C. E. Anjaya, and Y. A. Arifianto, “Misi melalui Pelayanan Holistik dalam Pendidikan Kristiani,” *DIDAKTIKOS Jurnal Pendidikan Agama Kristen*, vol. 5, no. 2, pp. 56–67, Dec. 2022, doi: 10.32490/didaktik.v5i2.143.
- [27] R. Mudyahardjo, *Pengantar Pendidikan : Sebuah Studi Awal Tentang Dasar-Dasar Pendidikan Pada Umumnya dan Pendidikan di Indonesia*. Jakarta: Raja Grafindo Persada, 2001.
- [28] Irene Ludji, “Respon Agama Kristen Terhadap Kerusakan Lingkungan Hidup,” in *Seminar Studium Generale*, Salatiga: Universitas Kristen Satya Wacana, 2014.
- [29] D. Hastjarjo, “Sekilas Tentang Kesadaran (Consciousness),” *Buletin Psikologi*, vol. 13, Dec. 2005.
- [30] C. E. Anjaya, R. Triposa, and A. J. Runtunuwu, “Gereja dan Pendidikan Kristen: Ekspresi Iman Mengatasi Isu Pemanasan Global pada Ruang Virtual dan Dunia Nyata,” *JURNAL TERUNA BHAKTI*, vol. 4, no. 1, pp. 36–47, 2021.
- [31] M. I. T. Dwikoryanto, C. E. Anjaya, and R. Trifosa, “Membangun Critical Thinking Anak Didik dalam Pendidikan Kristen Abad 21 Melalui Research Based Learning,” *Regula Fidei: Jurnal Pendidikan Agama Kristen*, vol. 6, no. 1, pp. 69–80, 2021.
- [32] K. Y. Tung, *Pembelajaran dan Perkembangan Belajar*. Jakarta: PT. Indeks, 2015.
- [33] K. Y. Tung, *Menuju Sekolah Kristen Impian Masa Kini*. Yogyakarta: ANDI, 2015.
- [34] UB, *Buku Pedoman Mahasiswa Problem Based Learning*. Malang: Universitas Brawijaya, 2011.
- [35] I. Nusanti, “Strategi Service Learning Sebuah Kajian untuk Mengembangkan Kegiatan Pembelajaran,” *Jurnal Pendidikan dan Kebudayaan*, vol. 20, no. 2, pp. 251–260, Jun. 2014, doi: 10.24832/jpnk.v20i2.142.
- [36] Wahyu A Rini, “Mitigasi Global Warming Melalui Pendekatan 4 R,” in *Prosiding Seminar Lingkungan Hidup*, Surabaya, 2008.