

Prospective Teacher as Environmental Agent: Between Hope, Opportunities and Possibilities Toward Sustainable Environmental

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Received: 06 June 2024

Accepted: 05 July 2024

Published: 30 July 2024

Abstract: Prospective Teacher as Environmental Agent: Between Hope, Opportunities and Possibilities Toward Sustainable Environmental. Objectives: This study aims to capture how students, as prospective teachers and environmental agents, voice hopes, opportunities, and possibilities in addressing socio-ecological and ecological problems of sustainable development. **Method:** Data was collected through questionnaires using Google form electronic format, interviews, and student activities during lectures. **Findings:** The research results show that students' understanding of environmental issues as a young generation is still dominated by disaster discourse and solution discourse, which emphasizes individual solutions, technological solutions, and anthropocentric views. It is known that students still consider waste and flooding to be the main problems. Meanwhile, regarding opportunities and possibilities, students see the need for active participation and full involvement in environmental actions such as campaigns through various media platforms, deliberations, sustainable environmental movements, and collective awareness as citizens and citizens of the world for the common good. **Conclusion:** By placing the environment as an essential and urgent problem, various risks can be prepared, anticipated, thought through, handled, minimized, and solutions sought to avoid social-ecological disasters in the future. Even though students' views are still within a limited range of lenses and dimensions, this has implications for the need for critical environmental learning in improving the quality of sustainable environmental education.

Keywords: sustainable education, social ecology, hope, opportunity, possibility, environmental agent.

To cite this article:

Gunansyah, G., Suryanti, & Nafisah, D. (2024). Prospective Teacher as Environmental Agent: Between Hope, Opportunities and Possibilities Toward Sustainable Environmental. *Jurnal Pendidikan Progresif*, 14(2), 883-901. doi: 10.23960/jpp.v14.i2.202465.

■ INTRODUCTION

The burden of the environmental crisis shows increasingly challenging and complex conditions that occur at various scales, from local to global. Several concerns regarding this issue have been initiated and agreed upon through international agendas starting from the "Earth Summit Rio de Janeiro" in 1992; "World Summit on Sustainable Development, Johannesburg, South Africa, 2002; the 2015 SDGs (Sustainable Development Goals) agenda; climate change conference in Madrid in early December 2019,

until the last meeting of the G-20 in Indonesia and COP27 (Conference of Parties) in Egypt in 2022. However, they all present several obstacles, opportunities, and challenges in achieving these expectations. Understanding environmental issues cannot be seen partially but integrally because of their complex nature. They are related to many dimensions, such as economic, social, and political, including the ethical basis and environmental paradigm underlying them. UNEP (United Nations Environment Program), together with UNESCO

(United Nations Education, Scientific, Cultural Organization), is a branch of the UN (United Nations) organization that focuses on studying natural issues, environmental policy, education, science, and culture (UNESCO, 2014). It has released a report on the quality of the natural environment in the world, including Indonesia, which is decreasing (Austin et al., 2019).

Because of this, one of UNESCO's strategic programs in the "Educational Decade" focuses on ESD (Educational Sustainability Development). The program aims to be implemented in schools and integrated into standard education plans, curricula, and frameworks (Wals, 2012). The sustainable development aspect includes environmental elements, such as the preservation of natural resources to ensure the primary function of the ecosystem; social factors, such as solidarity and cooperation between communities; and economic aspects, to ensure the quality of life through individual and community self-development. Out of the 17 SDGs agenda, efforts to improve the quality of education (goal 4) and combat climate change (goal 13) are two essential and urgent strategic objectives to pay attention to. Education is one of the agendas promoted as the core of the SDGs strategy to promote capacity building and educational processes in strengthening community capabilities in sustainable actions (Westphal et al., 2018). Meanwhile, in climate change, efforts are needed to reduce vulnerability, increase resilience, and achieve sustainability, and all of this has the potential to be pursued through pre-disaster education practices. Educational practices can provide interventions to preserve the environment and biodiversity (Harring et al., 2017).

The increasing awareness and involvement of young people in the United States on climate change issues show continued political engagement (Zummo et al., 2020). Critical understanding is

needed to examine certain narrative forms as authentic knowledge (K. P., 2019). However, at the same time, the national curriculum and exams tend to limit topics that must be discussed related to 'urgent topics' and do not provide access to the latest information, making it less conducive to critical thinking (Ghosn-Chelala & Akar, 2021). According to him, although the current practice has encouraged a commitment to caring for the natural environment, it is not yet sufficient to raise awareness of environmental citizenship, such as encouraging critical involvement and democratic processes in preventing and solving environmental problems. The lack of interdisciplinary pedagogy and interconnectivity hinders practical success in teaching and learning about environmental education (Kirsop-Taylor et al., 2020).

Student engagement as citizens can be supported and encouraged through an open school climate, democratic structure within the school, and early opportunities for active participation, promotion of students' citizenship knowledge, and inclination to engage in civic activities in the future (Schulz et al., 2018). Student involvement in environmental activism initiatives can promote communication skills through the exchange of arguments for specific actions, skills in investigating causes and solutions, critical thinking, commitment, and empowerment (Reis, 2020). This view then encourages an environmental citizenship approach in environmental education. I was referring to the definition of the European Network for Environmental Citizenship (ENEC), where environmental citizenship is defined as responsible pro-environmental behavior of citizens who act and participate in society as agents of change in private and public spaces on a local, national, and global scale through individual and collective action towards solving contemporary environmental problems, preventing the creation

of new environmental issues, achieving sustainability and developing a healthy relationship with nature (A. Hadjichambis & Reis, 2018).

For the context in Indonesia, previous studies were limited to focusing on photographing how environmental education is implemented but missed in exploring the constructions of young people, including prospective teacher students, on social-ecological issues as well as researching sources of hope and how these sources of hope are dialogued in the implemented environmental programs. Meanwhile, in a global context, there are still minimal studies reporting how the seeds of hope for young people improve environmental quality, placing the voice of young people in seeing the complexity of sustainable development issues. The conceptualization of environmental agents in education has been limited regarding institutions and educators. However, it has yet to be explored adequately from the perspective of prospective teacher students as the main actors of education in the future.

This study wants to investigate how the voices and expectations of young people as environmental agents, especially prospective teacher students, regarding the construction of social-ecological issues. In addition, this study also offers efforts to integrate how critical awareness efforts can be identified through the voices, hopes, choices, and possibilities of the environmental agents involved. Efforts to identify sources of students' hopes and experiences in constructing meaning as environmental agents still need to be improved and neglected in educational space. Student teacher candidates are still positioned as passive citizens and knowledge consumers, so they are expected to become active citizens and producers. In general, studies conducted in environmental education have not been explored adequately in placing and promoting student-teacher candidates as environmental agents.

■ METHOD

Participants

Participants in this research were 158 students aged between 18 and 19 years spread across four classes in the first year of the class 2022 at the Department of Primary School Teacher Education, Surabaya State University. This consideration is based on the fact that students at this stage have just left high school (SMA or pre-university) to enter higher education (university). The sampling method uses a purposive approach for exploratory purposes in deepening relevant information. This. The data collection technique uses an online structured questionnaire via Google Forms and interviews. A total of 12 respondents participated, with three representatives from each class to be interviewed using semi-structured questions. Interviews lasted between twenty and thirty minutes and were recorded for transcription and summarization. The method used for transcription analysis can be compared to Kvale's term: lengthy statements are condensed into shorter statements formulated into words (Kvale, 2011). This approach reduces more extensive interview texts to shorter formulas. To help answer questions regarding the research objectives, the respondents interviewed were directed towards students who came from the Adiwiyata school (Green School) while pursuing a high school education.

Research Design and Procedures

This research employed a survey method and took place over one semester with first-year students attending lectures in the Department of Elementary School Teacher Education. Since the validation study used a qualitative approach, it was not possible to establish co-assessor reliability in the statistical measurements. Furthermore, this method does not allow for the measurement of statistically significant differences between groups. Upon completion of the survey,

the student interviewees transcribed and analyzed all the interviews together, and it was determined that the interviews were conducted with a high level of coherence.

Instrumens

The survey instrument was prepared by adopting several ecological world views developed by US Riley Dunlap through the New Ecological Paradigm (NEP) scale (Dunlap, 2008) and the Education for Environmental Citizenship (EEC) model developed by Hadjichambis and Paraskeva-Hadjichambi (A. C. Hadjichambis & Paraskeva-Hadjichambi, 2020b) with several adjustments to be validated by expert judgment. The instrument was designed with a total of 24 open questions with five questions about youth voices (Q1-Q5), five questions about the expectations of the younger generation (Q6-Q10), four questions about the possibilities of the younger generation (Q11-Q14), and nine questions about the younger generation's discourse construction regarding social-ecological issues (Q15-Q24). The 24 survey questions focused on capturing how prospective student teachers as young people and environmental actors provide views and responses in the form of voices, hopes, and possibilities. To increase the experience of pro-environmental action that students have experienced, 18 schools were selected that have implemented pro-environmental programs. Through interviews, participants explored how they responded to the experiences, implications, and construction of social-ecological issues as students and young

people. The instrument developed was in the form of six questions about the experiences of the younger generation in sustainable environmental action (Q25-Q31).

Data Analysis

The data analysis technique uses text analysis in the form of open responses, views on specific topics, and experiences that appear in participants' answers. Material was first coded into categories as a basis for forming thematization. Coding is determined by the theoretical assumption that hope, opportunity, and possibility are essential aspects of critical educational transformation to empower educational actors. The following codes covered students' discourse construction as young people about social-ecological issues and young people's experiences in pro-environmental action. The results of the interviews were listened to repeatedly, and the parts that matched one of the codes were copied and then categorized to obtain patterns, themes, and meaning from the text data.

■ RESULT AND DISCUSSION

Construction of young people's Understanding of social-ecological Issues

Most of the characteristics of the research subjects came from rural areas (70.6%) and urban areas (29.4%). As for gender, the majority were female (82.4%) and male (17.6%). The following describes how young people's voices, hopes, and possibilities/opportunities relate to social-ecological issues.

Table 1. Voices of young people on social-ecological issues

Question	Response
[Q1] What environmental/ecological problems do you often encounter/feel/experience in your residence [urban or rural]?	Garbage problems, landslides, river overflows/floods, air pollution, agricultural pests.

[Q2] Did you experience anything wrong/unpleasant with the incident/event? If yes, what is the impact/influence on you and the environment?	Most say Yes. The impacts felt include unpleasant odors caused by water/river waste pollution, daily activities/mobility disrupted, the surrounding environment becoming dirty, unhealthy, and disruptive to breathing, difficulty accessing destination locations, traumatic, crop failure of agricultural land, polluted rivers, smelly, seedy and overflows when it rains, water crisis.
[Q3] What is Your view on current efforts to prevent and save the environment?	Reforestation, taking firm action against the perpetrators of environmental destruction, preventing the use of hazardous agricultural materials (pesticides), maintaining cleanliness and caring for the environment, and ensuring that river flows are smooth and not clogged, evaluation is still needed in preventing and saving the environment, getting used to caring for the environment, environmental actions that are there are still ineffectiveness, the role of the government is not optimal.
[Q4] How do you respond to environmental disasters/crises that often occur repeatedly?	Various disasters should serve as an alarm so they do not happen again; the government is more assertive in resolving environmental problems, there is still a lack of awareness of environmental preservation, all parties are protecting the environment together, feeling concerned, the need for rules governing, is hazardous, makes them uncomfortable and anxious. Beware of impending disaster.
[Q5] What are the biggest obstacles/obstacles you feel/found in carrying out these alternative activities?	Lack of public awareness in protecting the environment and disobedience to regulations, conversion of agricultural land, lack of participation, the tendency to individualization, use of materials that are not environmentally friendly, limited funds, lack of government attention, lack of understanding of environmental issues, limited green open land, inadequate use of technology, lack of community responsibility in protecting the environment

Based on Table 1, it is known that most of the voices of young people still place the problem of waste and flooding as the main problem; a disaster is an unpleasant event because it is seen as disturbing human activities; prevention efforts by protecting and caring for the environment, habituation and in the form of imposing sanctions; factors causing environmental problems due to lack of awareness and lack of firm sanctions by the government; the most significant obstacles/

obstacles in the form of a lack of awareness and responsibility for the rules, lack of attention and participation in protecting the environment.

Based on Table 2, it is known that the hopes/opportunities of young people emphasize creating a healthy, clean, green, safe, comfortable, beautiful, and conducive environment, avoiding both water and air pollution, having lots of trees, and being free of waste as well as easy access and repair of facilities; how to solve environmental

Table 2. Expectations and opportunities for young people on social-ecological issues

Question	Response
[Q6] What conditions/circumstances do you expect/want right now?	A healthy, clean, green, comfortable, safe, conducive, beautiful environment; free from floods, people who care more and love the environment, protected from pollution, free from waste, no disasters and victims, lots of trees, and improved public transportation facilities, drainage, avoided environmental crises, easy access to services and community welfare.
[Q7] What efforts/steps/means do you believe can prevent/overcome/recover from the disaster/crisis that occurred? Why?	They are preventing potentially damaging actions, raising public awareness not to throw away trash, reforestation, and environmental restoration, planting bare land, not throwing garbage into rivers, implementing eco-green, carrying out zero waste movements, not using single-use materials, carrying out composting activities, inviting the public to be active, socializing environmental impacts, reducing the use of private and motorized vehicles, starting small things by not throwing away the trash, campaigning for car-free days, doing cooperation, making slogans/posters, implementing 3R (reduce, reuse, reuse), cleaning waterways, increasing water absorption holes, imposing strict punishments, reducing the use of fossil fuels.
[Q8] What opportunities/possibilities will this effort/method result in?	Environmental facilities become more durable; floods will not occur frequently, and the environment becomes beautiful, clean, and comfortable; preventing floods, river pollution, and landslides, reducing plastic waste, no air pollution, habituation to protecting the environment, freeing the environment from air pollution and avoiding disease, reducing carbon dioxide and obtaining fresh air, achieving recovery efforts for the environmental crisis that occurred, the forest is beautiful again, and the soil structure is not critical, fear arises and slowly becomes responsible.
[Q9] Are there alternative activities that are desired/desired besides the current activities?	There were some who said "nothing", provided trash bins, worked together, carried out infrastructure development, utilized waste as handicraft materials, used tumbler drink bottles, planted 1001 trees, routine environmental clean-up activities, gotong-royong activities cleaning gutters every week, cleaning rivers and ditches, carrying out eco-bricks (recycling dry plastic packaging by condensing it into bottles), giving fines, using vehicles with solar/electric technology.
[Q10] Why do you believe this activity is the most suitable/appropriate/best activity?	Actions are natural; people can be more educated, change their mindset going forward, and believe the solutions chosen can overcome environmental problems, problems cannot be changed in total, but at least can reduce impacts by protecting the environment

will get commensurate benefits, change starts with individuals and starting from a small thing, only that solution can be done, can make the environment clean and the air good, the government has the power to enforce regulations, solutions are adapted to environmental conditions, through sanctions can make the perpetrators think twice about doing the same thing

problems by raising awareness in managing waste, especially with the 3R slogan, and saving energy; desired alternative activities in the form of environmental cleaning activities, utilization of unused materials and waste management; the

belief that change must start from oneself and start from small things.

Based on Table 3, it is known that the possibility of young people towards a better environmental condition still places the need to

Table 3. Possibility of young people to social-ecological problems question response

Question	Response
[Q11] What do you plan to support this way?	Started by planting vacant land with trees, admonishing people for throwing garbage, creating environmental care forums, carrying out environmental care campaigns, started by protecting the environment yourself, being involved in environmental movements, holding community meetings/forums, participating in environmental activities, participating in competitions / anti-waste movement program, making a community service agenda once a week, conducting counseling/ outreach, participating in the eco-green program, buying plants and planting them around the house, being more active in carrying out environmental activities, making videos/posters about the environment, calling for the voices of young people, reporting violations regarding environmental issues, expressing ideas to community leaders, saving water, holding discussions with village officials about improving environmental facilities, being active in community environmental organizations, promoting anti-waste
[Q12] What environmental conditions do you idealize (envision) in a better future?	An environment that is green, clean, healthy, beautiful, relaxed, and comfortable; a balanced ecosystem; an environment without waste; an environment with minimal solutions; an environment that is well maintained, neat, with lots of greenery, and not much pollution; clean environment like in Japan, good road conditions and transportation that avoids accidents, forests are no longer bare, and rivers are not polluted, the earth's atmosphere thickens.
[Q13] Today's society is built on shared awareness and	This is something good, in solving problems requires other people, humans are social creatures, disagree

interdependence because they have the same fate; what do you think?

because everyone is different in obtaining facilities, have the same fate, have awareness in maintaining the same environment, not good because it will lead to dependence on other people, natural because as social beings, you cannot do it yourself, you need the help of others, to create a better environment, you agree because without awareness it will be challenging to realize the expected environment, humans need and are needed by each other, each other helps each other, strengthens togetherness for the sake of mutual safety, humans cannot live alone and depend on others, without unity it will be challenging to realize shared goals, to create a prosperous world, without shared awareness there will be no movement for change, to support each other and build a better life, if one feels the same other people also feel, awareness needs to be built together, so that there is no disaster, it is fitting for fellow human beings to establish relationships with each other, one individual's awareness is expected to influence other individuals.

[Q14] Future risks are often invisible, but there is a possibility that they are on their way to reality; what is your view?

Must be prepared for the worst possibility, the earth becomes damaged, need to prepare as early as possible, sometimes trivial but has a significant impact for the future, always pray and try to God Almighty, plan good things from now to minimize risks, there is a possibility that all risks can occur sooner, need to be prepared to face risks in the future, if not handled immediately it will get worse in the future, plan for the best possible future, the future is unpredictable but can be predicted so that preventive measures can be taken, prepared for all the worst possibilities, believe everything has been determined, just try to do your best, believe and believe in destiny and always make an effort and surrender, can do a lot of prevention activities, make adjustments and think about changes, risks in the future are often invisible, part of the process will definitely happen, facts are needed and data through research, will be faced and must always be ready to face it, everything that is done will bring about change, need to be careful in actions especially bad things, minimize existing risks, need to be faced and find solutions.

participate in environmental activities such as campaigns, deliberations, cleanliness movements, and production of pro-environmental media; expected environmental conditions in the form of a green, clean, healthy and relaxed, comfortable

environment and a balanced ecosystem; shared awareness that needs to be built through cooperation as social beings, fellow human beings, citizens and citizens of the world for the common good; risk is seen as something wrong

so it needs to be prepared, predicted, anticipated, thought through, handled/ minimized, solutions are sought as a preventive effort and to avoid future disasters.

Young people's construction of discourse on social-ecological issues

In order to get an overview of young people's views on the complexity of environmental issues, several primary and critical questions related to the central issue of the socio-ecological crisis are asked. This description is needed to discover the main discourses in young people in responding to social-ecological problems.

[Q15] Response to the question about what are resources

Young people define resources as everything that exists in nature to be utilized for human life, originating from nature, both renewable and non-renewable to meet human needs; everything that exists on earth without human intervention; nature is processed and used by humans in everyday life; to meet human needs and survival, to improve human welfare, to be used by humans to derive use values and benefits such as petroleum, water; some view resources as wealth to be utilized by living things

[Q16] Response to the question of what is development

Young people define development as something that is done from nothing to exist both physically and non-physically; change processes that produce positive or negative impacts; the process of change for the good of everyone towards the good; covers all aspects of politics, economy, culture, defense, education, and technology; the process of changing something to be better than before; change plan or process to improve human resources to be intelligent, healthy and care for the environment; processes

to improve human life; create something new based on goals; effort or work done to evaluate and improve it; the process of making something that is planned to be used in meeting human needs; and the process of making a well-planned and mature foundation.

[Q17] Response to the question of what sustainability

Young people define sustainability as anything that is still or can be used for a long time; an endurance process; diversity on earth exists and is available; conditions when humans and nature go hand in hand in harmony to meet current and future socio-economic needs; something that goes from the past, present and into the future; everything that is done gradually to produce something desired; the process towards something more advanced; nature and humans are in harmony to enable the fulfillment of social, economic and other needs for present and future generations; the ability of biotechnology to support unlimited biodiversity and productivity; to create a continuous quality of life and a condition that goes on continuously without an endpoint; resistance to something; the process continues until a predetermined period; something that happens continuously/cannot be stopped; processes that take a long time to meet future needs; (14) a system capable of sustaining biodiversity.

[Q18] Response to the question of what is an environmental problem

Young people define environmental problems as negative aspects of human activity on the bio-physical environment; all issues related to the environment (humans, plants, and animals); negative impact due to human behavior; various problems arising from the surrounding environment due to a number of factors and aspects; something that affects nature either directly or indirectly; negative actions that threaten

environmental safety; something that harms humans, environmental problems created by humans or natural causes; something that brings humans to think, learn and recognize the environment; problems caused by human activity whether intentional or not.

[Q19] Response to the question of what are the rights and obligations of citizens regarding environmental issues

With regard to rights and obligations to environmental issues, young people define rights as a form of concern for surrounding environment; make good use of; the right to live in a clean, sound and healthy environment; have the opportunity to take advantage of the potential that exists in the environment for good in the future; can enjoy the wealth available in the natural surroundings; the right of every citizen to obtain an equal share of the use/processing of natural products; has the right to oppose prohibiting activities that cause damage to the environment; propose opinions on how to protect the environment; get access to information, participation and access to justice for a good and healthy environment; has the right to submit objections to business/activity plans that are expected to have an impact on the environment, plays a role in environmental protection and management in accordance with the law, has the right to make complaints due to allegations of environmental pollution/damage; has the right to utilize or use natural resources; has the right to change the environment; done by planting trees; utilize the results of what has been done in managing nature; get a comfortable environment to live in; get clean air; all living things benefit significantly from the earth; Every human being has the right to do activities that will be carried out while protecting the environment.

Meanwhile, regarding obligations, it is defined as an effort to maintain environmental sustainability both through direct and indirect

actions; keep the environment clean and healthy; maintaining the environment so that the ecosystem is maintained; every citizen is obliged to protect, preserve and develop nature so that environmental problems do not arise; controlling environmental damage; not damage the environment by protecting it; attempt to prevent environmental damage; not cut down trees illegally; controlling pollution and or environmental damage.

[Q20] Response to the question what are the triggers/causes of environmental problems

Young people share the view that the rapid industrial revolution causes the triggers/causes of environmental problems; rampant deforestation to industrial support sustainability; human interference with nature; the leading cause and trigger is man himself; lack of public/citizen awareness of the importance of protecting the environment in the future; caused by two factors (natural and human); due to human activities such as air pollution, water; irresponsible behavior that has an impact on environmental imbalances; negligent in protecting their environment, lack of awareness and insensitivity of humans to the environment; some offenders are negligent in fulfilling their obligations to use nature; continuous, excessive and wrong use of natural resources; human actions that are contrary to the laws of nature, lack of awareness that starts from oneself and starts from small things.

[Q21] Response to the question of whether the problem can be solved entirely through science and technology

Young people give their views on the position and role of science-technology (scientific) that science is competent because science and technology can solve problems more quickly; with science and technology can develop superior human beings who can create new products to overcome changes/damage to the

environment; can continue to develop innovation; the era is modern so science and technology are needed to overcome it; science can overcome it even though it does not fully restore the impact that has occurred; can be overcome because it can be monitored and supervised. While there are also those who say that science and technology are something that cannot be done because solving environmental problems needs to involve humans and science and technology are only the media while the key lies in public awareness; science and technology cannot fully solve problems because they have deficiencies and limitations; humans are the most important and science is only limited to helping; technological sophistication is useless if it cannot change human bad habits and human consciousness does not change; not entirely with technology because solving problems requires awareness, deliberation, and cooperation among human beings; Apart from science, a religious approach is also needed for humans to know which actions are sinful and which are not; the use of technology sometimes solves problems but creates new problems; even though science can make it easier and more efficient, it does not entirely solve environmental problems because the evidence is that until now the problem continues to occur and recurs; technology is specific there are deficiencies/weaknesses so that it cannot be entirely relied upon.

[Q22] Response to the question of how to prevent the same environmental problems from recurring

Young people give the view as an action that happened (badly) should not be repeated with the slogan “no more”; impose sanctions on all people who have done damage to the environment; need cooperation between various parties; instill a love for nature and the environment from an early age; can learn from mistakes so that the same thing does not happen again; start

with yourself from small things to always care about the environment; conduct an analysis of the causes of environmental problems and think about ways to solve them; need firm legal action; need to revise provisions that do not support environmental preservation; law enforcement is needed so that it is not blunt upwards but pointed downwards; provide criminal penalties for perpetrators of environmental crimes; conduct a thorough evaluation of environmental issues; it takes a genuine intention to start an environmentally friendly action; prioritizing the creation of a comfortable and pleasing environment.

[Q23] Response to the question about which parties are most responsible for environmental problems

Young people view humans as a whole; community and government agencies; all parties must be held accountable; local communities and industry; local and central government for policies that are not pro-environmental; all citizens; all earthlings; all living things.

[Q24] Response to the question what are the ways/solutions to prevent/save the environment

Young people expressed the view that prevention efforts could be carried out through the “Save and care for our earth” campaign both online and offline; make pro-environmental laws, maintaining the balance and preservation of nature; foster self-awareness of the surrounding environment; carry out environmentally friendly actions such as implementing 3R (reduce, recycle, reuse), reforestation, saving energy, reducing the use of plastic, reducing the use of fertilizers; carry out environmental restoration such as greening programs, recycling, waste treatment, reducing environmental pollutants; strictly enforce the law against environmental destroyers; give appreciation to environmental saviors; apply

environmental literacy; always do self-introspection and do not let go of environmental responsibility; environmental prevention and protection.

Experience of young people in pro-environmental actions

The interview involved students as young people and was divided into two sessions.

Interviews were conducted with students whose schools came from several cities and regencies in East Java, including Surabaya, Nganjuk, Jombang, Trenggalek, Mojokerto, Lamongan, and Ponorogo.

Based on Table 4, it is known that young people's experiences while participating in learning at school include making eco-bricks to make chairs and other products, clean Friday activities,

Table 4. Experience of young people in pro-environmental actions

Question	Response
[Q25] What experiences are gained regarding learning (inside and outside the classroom) related to environmental education?	Environmental education/learning experiences include being invited by teachers to recycle waste when commemorating Heroes' Day, using unused items as accessories, collecting waste, conducting experiments in biology using bottles, and in craft lessons learning to plant trees using used goods, every break time/when you come home from school bring the collected garbage to be taken to the warehouse to be torn apart, and the proceeds from the sale are used for the school program, once a month (sometimes) there is a Friday school cleaning program, go to kenjeran beach to collect waste, there are also those who use recycled waste to make clothes for competitions.
[Q26] What environmental activities/activities do you often do?	There is a clean Friday; it is advisable to bring trees/plants, every month there is a cleaning activity which is marked by the sound of a siren (5 minutes cleaning); if there are certain events, ask to bring trees, bio pores, composter, waste bank, caring for the garden, and if it bears fruit can be sold, there are park competitions/competitions, most often activities are planting trees, cleaning.
[Q27] What was the most enjoyable/memorable experience	When Friday activities are clean because you can get to know other classes and get along with each other
[Q28] Were there any activities that were not/less enjoyable/impressive/monotonous?	Bored with the food in the canteen, when planting trees, sometimes it is just a contribution, and they do not plant it themselves (usually by the Student Council), so it is less memorable. The activity is repetitive. Felt the same when doing activities in middle school and high school
[Q29] What do all these activities mean to you?	The creation of a sense of kinship, getting to know each other,
[Q30] Is there any integration into the subjects?	There are not any, although there are still limited, and even then, it is more about learning natural sciences like biology.
[Q31] Is there any hope for the future?	If you want something different so you do not get bored/bored, you know that is all; the program has been determined,

planting trees/maintaining gardens, making biopori, composter; waste banks; feeling proud, happy to know that the school has the status/predicate of *adiwiyata* and that the school is shady, lots of trees, and calm; the creation of a sense of kinship and getting to know each other between different classes; learning integration is still limited to specific subjects, possibly still being affected by the co-19 pandemic; almost all feel bored with the program provided by the school (predetermined) and want different and varied activities so they do not get bored. While environmental education actions still emphasize the orientation of habituation practices to environmentally friendly activities and rehabilitative actions on a limited scale in the school environment

At least in the last decade, the concept of environmental citizenship has been influential in many different arenas, including in education. Referring to the ideas of Hayward, environmental citizenship is directed towards pro-environmental behavior, in public and private, driven by a belief in the fairness of the distribution of environmental goods, in participation and co-creation of policies through the active participation of citizens towards sustainability (Hayward, 2012). Many studies have explored the application of the Education for Environmental Citizenship (EEC) approach in environmental education. For Smederevac, education that focuses on developing environmental/ecological values, knowledge, skills, and competencies must be considered an essential factor in developing Environmental Citizenship (Smederevac-Lalic et al., 2020). However, the conceptualization of environmental citizenship in education remains an urgent need to be updated and expanded to achieve positive environmental results, especially considering the increasingly urgent environmental crisis (A. C. Hadjichambis & Reis, 2020).

Referring to the EEC developed by Hadjichambis and Paraskeva-Hadjichambi, eight outcomes can be achieved through individual and

collective action, implemented in public and private spaces and on a local, national, and global scale (A. C. Hadjichambis & Paraskeva-Hadjichambi, 2020a). Based on this model, a combination of individual action-private spheres (promoting inter & intragenerational justice, practicing environmental rights & duties) is produced; individual action-public sphere (addressing structural causes of environmental problems, achieving critical & active engagement and civic participation); collective actions-private sphere (achieving sustainability, developing healthy relationships with nature); collective action-public sphere (preventing environmental problems, solving environmental problems). Furthermore, the findings regarding young people's voices, hopes, and possibilities regarding social-ecological issues are then grouped into the eight outcomes of the EEC model.

Individual action-private sphere

First, promoting inter & intra-generational justice includes ease of access to services and community welfare; creating a prosperous world; lousy smell due to water/river waste pollution, disrupted daily activities; air pollution interfering with breathing; difficulty accessing the destination location, causing trauma; environmental crisis makes uncomfortable and anxious; the environmental crisis is hazardous; no disasters and victims; failure to harvest agricultural land; polluted rivers, the smell of sewage and overflow when it rains; water crisis, conversion of agricultural land. In facing and responding to the ecological crisis, educators are often hindered by time constraints, professional demands, and a need for more guidance on success (Verlie et al., 2020). Through her studies, Verlie provides a starting point for further exploring how educators can practically navigate interpersonal complexities to foster active hope in increasing ecological stress.

Second, practicing environmental rights & duties. The right includes the absence of air pollution; free from air pollution and protection

from disease, reduced carbon dioxide and fresh air obtained; free from floods; avoid pollution, free from garbage; avoid the environmental crisis, and a healthy, clean, green, comfortable, safe, conducive, beautiful environment. While duties include: maintaining cleanliness and caring for the environment; starting small by not taking out the trash; ensuring the flow of the river is smooth and not clogged; getting used to caring for the environment; feeling concerned; habituation to protect the environment; the emergence of fear and slowly becoming responsible; change starts from the individual and starts from small things; start by taking care of the environment yourself; buy plants and plant them around the house; more active in carrying out environmental activities; to save water; changing the mindset of the future; participate in environmental activities; called out the voices of the youth. In understanding how young people's voices articulate ideas such as climate change, Zummo study group them into three discourses: solution-oriented, climate-political, and disaster (Zummo et al., 2020). First, solution-oriented discourse emphasizes individual solutions and technological solutions. The second, legal, political discourse emphasizes political references, the attribution of climate change to humans, anti-capitalist themes, and advocacy for policy-based solutions. Third, discourse on catastrophe emphasizes the impact of climate change on humans and wildlife, which is seen as a real threat that is hard to expect.

Individual action-public sphere

Third, addressing structural causes of environmental problems, including taking firm action against perpetrators of environmental destruction; the less optimal role of government; existing environmental measures are still ineffective; the government is more assertive in solving environmental problems; the need for governing rules; limited funds and lack of understanding of environmental issues; give strict

punitive action; give a fine; the government has the power to enforce the rules; through sanctions can make the perpetrator think twice about doing the same thing; report violations on environmental issues; lack of participation and tend to be individualistic; limited green open land; use of materials that are not environmentally friendly; use of technology that is harmful to the environment; lack of community responsibility in protecting the environment. Teachers still see young people less as agents of change and more as passive citizens who must accept life in the world (Ghosn-Chelala & Akar, 2021).

Fourth, achieving critical & active engagement and civic participation. Critical aspects include: the surrounding environment becomes dirty and unhealthy; needs evaluation in environmental prevention and rescue; disaster becomes an alarm so that it does not happen again; still lack awareness of environmental preservation; lack of public awareness in protecting the environment and disobedience to the rules. A necessary momentum has been shown by young people/students such as Greta Thunberg, Autumn Peltier, and Ayakha Melithafa, who have raised their voices in their speeches at world economic forum meetings and demanded that their voices be heard. Srbinovski & Stanišić emphasized the importance of identifying cultural, political, and educational characteristics that shape environmental values and attitudes related to environmental behavior (Srbinovski & Stanišić, 2020). According to him, it is necessary to support ideas for change in environmental education from a perspective that focuses on conservation, positivism, and scientism approaches to an interdisciplinary, proactive, holistic, critical, action-oriented, and participatory approach.

While the active engagement aspects include: inviting the community to be active/demonstrate environmental impacts; carry out mutual cooperation / all parties jointly protect the

environment; make slogans/posters/videos about the environment; cooperate in infrastructure development; society can be more educated; create an environmental care forum; carry out environmental awareness campaigns; involved in the environmental movement/active in community environmental organizations; holding citizen meetings/forums; take part in competitions/programs of the anti-waste movement; make a community service agenda once a week; conduct outreach/socialization; express ideas to community leaders; conduct deliberations with village officials regarding the improvement of environmental facilities; unable to do it yourself because you need someone else; humans need and are needed/humans cannot live alone and depend on others; others help each other/without being united it will be difficult to achieve common goals; strengthening in togetherness for the standard safety; without shared awareness there will be no change/awareness needs to be built together. Every journey of social transformation begins with the will and ability to philosophically question what underpins cultural practices, how institutions define and actively support the continuation of societal and cultural values, and question their role and find ways to empower communities and individuals to reassess ways of acting, on existing values (Edwards, 2016). According to Parker & Sear, at least four aspects of pedagogy are problematic in Indonesia and many other developing countries, namely: the continued dominance of rote learning, the focus on transmitting facts, the gap between environmental awareness and knowledge on the one hand and pro-environmental behavior on the other; and the effects of learned helplessness and apathy (Parker & Prabawa-Sear, 2019).

Collective actions-private sphere

Fifth, achieving sustainability, including lots of trees and improvement of public transportation facilities; reduced plastic waste/ Zero waste

environment/ Promoting anti-waste; achievement of efforts to recover from the environmental crisis that occurred; the forest is beautiful again, and the soil structure is not critical; taking care of the environment will get commensurate benefits; make the environment clean and the air good; forests are no longer bare, and rivers are not polluted; thickening of the earth's atmosphere; creating a better environment; balanced ecosystem. A holistic understanding of sustainable development, which includes integrating environmental, social, and economic aspects on the part of stakeholders, is critical to promote among teachers in primary and secondary schools. Another study from de Pauw regarding ESD has had an impact on student learning outcomes in terms of awareness regarding their sustainability so that ESD can play a crucial role in managing SD and paving the way for a more sustainable future (Pauw et al., 2015).

Sixth, developing a healthy relationship with nature, including reforestation, planting bare land, and planting 1000 trees; start by planting empty land with trees. In order to develop environmentally literate citizenship and the ability to solve the increasingly complex environmental problems facing society, there is a need to increase students' access to environmental education field experiences and link these outdoor experiences to relevant curricula in the classroom. Moreover, this is especially important for students who are in urban environments, where residents and students may need more daily connection with nature. The study by O'Neil examined the activities of teachers and students in high schools in New York, America, who designed research-based field investigations to record water quality in watersheds (O'Neil et al., 2020). Stewart's study of the importance of Outdoor Environmental Education (OEE) has created educational experiences about history, nature, and culture in Australian places where students are located (Stewart, 2020).

Collective action-public sphere

Seventh, preventing environmental problems, including raising public awareness not to throw garbage; rebuking people who throw garbage; campaigning for a car-free day; not throwing garbage into the river; do not throw away disposable materials; preventing potentially harmful actions; reducing the use of private and motorized vehicles; reducing the use of fossil fuels; preventing floods, landslides, river and soil pollution; prevent the use of hazardous agricultural materials (pesticides). Environmental crises, such as climate change in education efforts from an emotional aspect, can bring up negative and positive emotions. Several studies have explored high school teachers' beliefs about the role of emotions such as worry, anger, and frustration about environmental crisis issues and how teachers handle students' emotional reactions. Ojala's study shows various views of teachers. Some judge emotions as negative and irrational, while others view them as positive to introduce a correct view of reality and be useful in learning (Ojala, 2021).

Eighth, solving environmental problems, including: improving drainage channels; utilizing waste in craft materials; making eco brick (recycling dry plastic packaging by compacting it in bottles); using vehicles with solar/electric technology; implementing 3R (reduce, recycle, reuse); provision of trash bins; cleaning drains; increase water absorption holes; use a tumbler drink bottle; implementing eco-green; carry out the zero waste movement; composting; gotong-royong activities cleaning the gutters every week; cleaning rivers and ditches. In the implementation of environmental education in Indonesia, most of the research reports on the influence/impact of implementing activities on the habituation of environmentally friendly behavior in schools. Activities that students at school mainly carry out include watering plants and saving energy, saving consumption activities using lighting and

ventilation, other activities in the form of maintaining classroom cleanliness and school sanitation, cleaning competitions, picket plant maintenance activities, designing vertical gardens, banks waste/composter (Roswita, 2020); (Adela et al., 2018). Through their research, Kirsop demonstrated that problem-based pedagogy in complex socio-ecological interdisciplinary learning can introduce deep and reflective political understanding to students and encourage them to become agents of change in preparing the next generation of critical environmental problem solvers (Kirsop-Taylor et al., 2020).

Based on voice, hope, and the opportunities/possibility of prospective teacher students as part of young people have been able to detect problems in weak law enforcement so that strict sanctions are needed to take action against perpetrators of environmental crimes (ecosida). This research can then serve as a further basis for an in-depth investigation of how educators present information and build communication in a dialogical way in empowering teachers to understand and apply issues of socio-ecological crisis in learning in schools.

CONCLUSION

Young people's construction of social-ecological issues, as shown through voices, hopes, and opportunities, are still limited to technical and environmental issues and viewing disasters from an anthropocentric perspective. Young people have not been able to fully see the complexity and interrelationships of environmental issues with social, cultural, and political dimensions, especially structural causes. However, in a number of cases, it was found that there was potential for critical attitudes and views in seeing the link between environmental issues and the problem of weak law enforcement against perpetrators of environmental crimes and environmental activism activities, although still on a limited scale. Young people claim to be proud and happy to be

involved in pro-environmental actions during their experience at school. However, on the other hand, they feel bored with the program the school provides (predetermined) and want different and varied activities so they do not get bored. Educational institutions at various levels, especially from secondary education (pre-university) to higher education (university), should give more focus and attention to facilitating young people see the complexity of social-ecological issues by using an extended lens and an expanded dimension. If it is still done conventionally, it will only be stuck in the old way and handling. A more comprehensive approach is needed to understand social-ecological issues, both in paradigmatic terms and practical actions to prevent and save the environment. This critical study is expected to provide important notes and great attention to the importance of examining the relationship between education, power, and the economy in improving schools' curriculum and learning practices toward educational and socio-ecological transformations.

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