

## Sustainable development education practices in elementary schools

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### ABSTRACT

This study described the practice of education for sustainable development (ESD) along with the supporting factors of the implementation of ESD in three elementary schools (SD) which are referred to as pilot education schools in Surabaya, namely SD Al Irsyad, Citra Berkah Primary School and Putat Gede I Surabaya Elementary School. The study used a qualitative approach with comparative descriptive methods. The instrument used in the form of in-depth interviews and documentation studies. Data analysis techniques included data reduction, data presentation and verification. The results of this study indicated that sustainable development practices that have been implemented in the Primary School in Surabaya take place: 1) As diverse as conservation which includes the stages of preservation, restoration, adaptation and revitalization and ecoliteracy to facilitate so students can build connections, awareness and experience; 2) Has been supported by the commitment of the school community and the leadership of the school principal as outlined in various policies and integrated into curricular and extracurricular activities; and 3) Has shown a number of development indicators sustainable in the field of education. Based on the linkages of the three main aspects of ESD, it appears that practices implemented in schools are still dominantly focused on environmental activities. However, there have been efforts to link environmental activities with social and economic activities through entrepreneurship week, cultural appreciation shows and other collaborations and participation that involve the participation of school members, the community and other policy makers even though in a limited scope and simple activities.

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### 1. INTRODUCTION

United Nations Education, Scientific, Cultural Organization (UNESCO) strategic program on Decade of Education is one of them focused on education for sustainable development (ESD). The purpose of the program is directed so that it can be applied in schools that are integrated into the standard education plan, curriculum and framework [1]. Education is an essential social component as well as a powerful tool for developing a peaceful and sustainable society [2]. Aspect of sustainable development through ESD is emphasized on how cognitive, affective, and behavioral responses [3]. Sustainable development contains an integrated three main pillars, namely environmental, economic and social [4]. The publication of the United Nations through the 2030 agenda contains 17 sustainable development goals as an integrated and inseparable

agenda in balancing three dimensions of sustainable development: economic, social and environmental [5]. Aspects of sustainable development include environmental aspects as the preservation of natural resources to ensure the main function of the ecosystem, social aspects as solidarity and cooperation between communities, and economic aspects to ensure quality of life through individual and community self-development [6].

A number of studies have shown teachers' understanding of the concept of ESD and the ability to integrate environmental, social and economic aspects into educational practices are still lacking. Primary School teachers in New Zealand still have a limited and simple understanding of the concept of sustainable development [7]. In understanding the concept of ESD, most teachers tend to put more emphasis on identifying environmental concepts [8]. This condition is certainly not in accordance with what is expected because ESD should be understood holistically and implemented in an integrated manner between environmental, social and economic aspects into learning practices. ESD Practice not only focuses on the cognitive aspects but how to facilitate the awareness that humans are part of the ecosystem, and translate into moral action to conserve the environment [9].

Many researchers have discussed environmental education in schools but in the context of research in Indonesia that specifically identified the characteristics of the integration of sustainable development which includes environmental, social and economic aspects into ESD practices which include dimensions of cognitive, affective and behavioral learning is still limited. A holistic learning approach to ESD content is needed to differentiate how the implications of sustainable development problems in each dimension from different points of view [10]. In recent years, the Government of the City of Surabaya has shown its commitment in supporting the implementation of environmental education, including at the level of primary education (primary school). Since 2016 the idea of environmental education through the *Adiwiyata* program has encouraged school residents in Surabaya to get to know and develop a more environmentally friendly attitude by carrying out environmental conservation activities [11]. In addition, to support the policy, *Tunas Hijau* has been introduced in schools to help the Surabaya City Government program in the environmental field with the motto "by kids and young people for a better earth". *Tunas Hijau* has the duty to facilitate and encourage school community awareness through simple, tangible and sustainable practices in improving better environmental conditions.

Primary schools in the city of Surabaya, both public and private, each have their own characteristics that are both unique and distinguishing from other schools. For the sake of comparative studies, there are three elementary schools, namely Al Irsyad Elementary School, namely Islamic education-based private elementary schools in Surabaya that have independent *Adiwiyata* achievements which are further categorized into environmental clusters; Citra Berkah Elementary School, which is a private school that has an Entrepreneurship program with an orientation encouraging students to think creatively and innovatively in exploring knowledge which is further categorized into economic clusters; Putat Gede I Elementary School, which is a state Primary School that declares it as a "Child Friendly School" while actively involving the participation of the surrounding community in various flagship programs of school activities, which are further categorized in the social aspect cluster.

Therefore, this paper is intended to deepen and enrich the perspective of good practices that have been carried out regarding the integration of sustainable development into ESD. Through the description of the implementation of ESD in the three elementary schools in the city of Surabaya, it is hoped that it can be used as a reference for a number of parties in promoting the concept of sustainable development in the field of education as a good practice relating to the application of sustainable development in the education sector.

## 2. RESEARCH METHOD

This study used a qualitative approach with comparative descriptive methods. This research is focused on identifying the characteristics of the integration of aspects of sustainable development into the dimensions of learning in elementary schools. The subjects in this study were principals and teachers spread across three Al Irsyad Surabaya elementary schools, Citra Berkah Surabaya Primary School and Putat Gede I Surabaya Primary School as many as three school principals and six teachers representing teaching in the early/low and advanced/high classes. This research uses primary data and secondary data. Primary data obtained through interviews with respondents. While secondary data used in the form of document data in the form of school programs and reports and documentation of activities related to ESD in the form of photos and archives. Due to the pandemic coronavirus disease (COVID-19) pandemic outbreak (coronavirus) in the midst of the simultaneous data collection process which forced a number of restrictions, especially government protocols on physical distancing, the process of data collection through interviews continued through online communication services. The data analysis of this study used data reduction, data display and verification (conclusion drawing). The assessment of the validity of the data used in the research is through credibility (via member checking), transferability (via thick description), dependability (via emergence), and

confirmability (via audit trail data) and crystallization, so that researchers can analyze the same situation from different perspectives. various respondents.

### 3. RESULTS AND DISCUSSION

ESD practices applied in three Al Irsyad Surabaya elementary schools, SD Citra Berkat Surabaya and SDN Putat Gede I Surabaya emphasized on two main aspects namely something that needs to be sustained and something that needs to be developed and how to integrate the three aspects. The main aspects of environmental, social and economic learning are presented as follows.

#### 3.1. Environmental aspects

The environment is one of the three main pillars of ESD whose scope is in the form of preservation of natural resources and the main function of the natural ecosystem. Indicators from aspects can be seen from the implementation of conservation and ecoliteration implemented in elementary schools. Conservation includes the stages of preservation, restoration, adaptation, and revitalization.

Preservation is a process to maintain the sustainability of an area that has been used so that it strives to remain in accordance with its original condition. At SD Al Irsyad the preservation activities are carried out by maintaining green spaces within the school environment by using a special strategy. The school makes and applies standard operating procedure (SOP) for the implementation of conservation activities including the planting of hydroponic plants in the screen house. In caring for plants as well as preventing the occurrence of plant growth barriers and the fatal impact of crop damage. Schools society is required to follow standard operating procedures in the hope of the creation of responsibility and gain long-term benefits of the conservation area of the school. Putat Gede I SDN Surabaya implements a plasticless system along with a reward and punishment strategy. The goal is for school society to make consistently the practice a habit every morning. Technically, the school assigns *Tunas Hijau* squads from the student element to routinely carry out checks on other students. School provisions prohibit school residents from carrying all types of items made of disposable plastic packaging. For students who are already carrying disposable plastic goods, then as punishment, the following day students are required to bring plant seeds. While rewards will be obtained by class groups who are able to carry out all the school's requirements consistently related to school sustainability. While at Citra Berkat Elementary School, preservation was only limited to cleaning activities in the classroom environment through the distribution of pickets but students were not yet involved in greening activities around the school area.

Restoration in the form of activities to change the conservation structure of an area without using new materials. The implementation of the restoration stage in schools is directed at encouraging school residents to create green land by utilizing unused materials. The activity at Al Irsyad Primary School is by changing the use of empty school areas (idle land) to greenland in order to produce benefits. Among its activities are processing bricks left over from building school buildings into a chilli planting media. The initiation was further developed in the manufacture of urban farming chili media to facilitate the training of students' skills in planting and caring for plants in the school environment. Putat Gede I Primary School utilizes the school warehouse land as a location for planting hydroponic plants. The process of making hydroponics is by utilizing the leftover pipe of the unused school construction which is packaged into a nutrient film technique (NFT) hydroponic tool. While at Citra Berkat Primary School realized by creating a school park designed as a place of learning for students in the environment outside the classroom such as observation activities that are designed based on the needs of the program of entrepreneur (POE) at each grade level.

Adaptation is a series of conservation activities whose main purpose is to re-function areas that have decreased vitality. Adaptation activities at Al Irsyad Primary School are realized in goldfish processing activities. The idea for this activity originated from the use of water used for ablution to be managed as fill water for fish ponds which is then used as a learning resource for student learning. Putat Gede I Primary School has re-functioned the green land in the form of a multifunctional school park into a literacy park, so that the school park which originally only functioned as a green land can be used as a student learning area outside the classroom equipped with reading rooms and traditional game play rooms and various types of planting domestic animals and domestic animals. While there is no selection activity at Citra Berkat Primary School.

Revitalization is a process of increasing social and economic aspects of a conservation area. This stage starts from the planning activities (determining the person responsible, the source of funding support), implementation (school citizen participation) and evaluation. All of these activities have been carried out at Al Irsyad Primary School and Putat Gede I Elementary School. Revitalization activities in these two schools were realized through the development of a hydroponic planting system by utilizing processed plant types,

namely vegetables. This hydroponic activity in addition to learning activities to maintain plants also trains to recognize economic activities in the form of production, distribution through sale of hydroponic crops and consumption. For more details the characteristics of each school in the aspect of social sustainability are presented in Table 1.

Table 1. ESD practices in environmental aspects

No	Component	Al Irsyad Elementary School	Putat Gede I Elementary School	Citra Berkat Elementary School
1	Preservation	Maintain green space in the school environment, prevent stunted plant growth by paying attention to the SOP for hydroponic screen house maintenance.	The application of plasticless system along with reward and punishment is carried out every morning.	Cleaning activities in the classroom environment through the distribution of pickets.
2	Restoration	Change the use of school areas that are empty (idle land) into green land in order to produce benefits, processing bricks left over from building school buildings into a media for growing chili plants through the concept of urban farming.	Utilization of school warehouse land into a hydroponic crop planting location by utilizing the remaining pipe paralon into a nutrient film technique (NFT) hydroponic tool.	Creating a school garden designed as a place to study students in an outside classroom environment such as observation activities that are designed based on the needs of the program of entrepreneur (POE).
3	Adaptation	Goldfish processing by utilizing used ablation water as a pool water filler.	Re-functioning green land in the form of a multifunctional school park into a literacy park that is equipped with a reading room and play area.	Processing organic waste into composting through composter barrel media.
4	Revitalization	The development of hydroponic planting systems by utilizing the types of processed vegetables and TOGA plants (family medicinal plants) such as aloe vera, turmeric, red ginger and galangal as economic consumption needs and health medicinal plants.	Introducing economic activities through the use of TOGA plant (family medicinal plants) products as processed products with economic value.	Creating traditional Indonesian food creations with cooking class activities that utilize natural ingredients obtained from the school garden.
5	Ecoliteration	Learning in the wild by utilizing Screen House, reducing the use of plastic, sorting organic and inorganic waste, project-based learning to make hydroponic plants with vertical gardens, processing organic waste into composting.	Practice based learning through planting hydroponic plants, inorganic waste management.	Implement through (1) The stages of exploring, planning, doing, communicating, and reflecting, (2) Outing back to the nature (3) Practicing responsibility toward the consequences of actions.

### 3.2. Social aspect

The social aspect is the pillar of ESD which is expected that students have an attitude of tolerance and realize human nature as social beings. The scope of the social aspects includes multicultural education and gender equality which is directed to appear tolerant and respectful towards differences in religion, ethnicity, gender, social status, language and ability differences. Implementation of multicultural education in primary schools Surabaya is facilitated through a training making about Batik Gulijat namely techniques by means of rolls, belts and bags.

Al Irsyad Primary School interprets multicultural education by introducing cultural activities which are facilitated by making simple batik with Gulijat techniques, namely roll, tie and jump and making miniature products of traditional houses. The main orientation of the activity is in addition to the potential to exercise student creativity, it can also foster a love for the characteristics of regional cultural diversity. Putat Gede I Primary School uses the additive approach indicator, which is to provide equal opportunities for all male and female students in various activities such as class leader selection, task distribution, as well as various opportunities that can be accessed openly to address gender differences. Citra Berkat Primary School does an empowering school culture activity, which is in the form of self-habituation between students and all school residents by presenting the complexities of ethnic and racial differences. The implementation of this activity is supported by the POE curriculum which is a special feature of this school. At the end of the learning semester, a variety of social activities are packaged into various cultural performances such as regional dances, folk songs and folklore. While gender equality-based education is packed with equal opportunities for men and women. For more details the characteristics of each school in the aspect of social sustainability are presented in Table 2.

Table 2. Practices in social aspects

No	Component	Al Irsyad Elementary School	Putat Gede I Elementary School	Citra Berkat Elementary School
1	Multicultural education and gender equality	The introduction of culture which is facilitated by the activities of making simple <i>batik</i> with <i>Gulijat</i> technique, making miniature products of traditional houses.	Provide equal opportunities for all male and female students in various activities such as the election of class leaders, the distribution of tasks, and various opportunities without regard to gender differences.	Empowering school culture (habituation to respect ethnic differences, regional cultural performances such as regional dances, folk songs and folklore, present equal opportunities for men and women).

### 3.3. Economic aspect

The economic concept in sustainable development is to minimize the use of natural resources by carrying out production and consumption based on mutual commitment in the community towards environmental care. One of the implementations of economic aspects in ESD is translated through ecopreneur which is characterized by the characteristics of respect for the earth, which is sensitive to environmental conditions. These efforts include maximizing the economic value of waste by recycling organic and inorganic waste. In addition, activities that are simple and effective by getting used to saving lives in the use of energy consumption, such as saving electricity and water. Table 3 shows ESD practices in economic aspects.

Table 3. ESD practices in economic aspects

No	Component	Al Irsyad Elementary School	Putat Gede I Elementary School	Citra Berkat Elementary School
1	Ecopreneur	The use of ablution water as a goldfish pond water filler, introducing patterns of production, consumption and reproduction, processing star fruit and markisa into syrup, bananas into banana chips, and aloe vera into pudding in ecopreneur activities, the economic value of waste recycling.	Making herbal drinks from red ginger from family medicinal plants (TOGA) crop yields and selling hydroponic crop yields.	Traditional food processing made by students and then appreciated at the Ecopreneur Week activity.

Al Irsyad Primary School seeks to use (1) The use of water used for ablution as a goldfish pond water filler. The practice can be said to have applied ecological principles and economic principles simultaneously; (2) Care for life, that is, designed through a habit of caring, respecting and creating a supportive climate to develop sensitivity to the conditions of the surrounding environment; (3) Adopt the pattern of production, consumption and reproduction, that is by processing natural resources around the school into useful products. Putat Gede I Primary School Surabaya implements through the activities of making herbal drinks from red ginger from toga crop yields as well as sales of hydroponic crop yields. Al Irsyad Primary School implements natural resources processing around the school such as processing starfruit and markisa fruit into syrup, bananas into banana chips, and aloe vera into pudding. Students process the results of school gardens into healthy food and packaged attractively, then sold in the Ecopreneur Market activity. Meanwhile, Citra Berkat Primary School implements traditional food processing made by students and is then appreciated at the Ecopreneur Week. In addition, other supporting activities include planting family medicinal plants (TOGA). This activity is intended to introduce students to the knowledge of the types, content and benefits of TOGA plants such as aloe vera, turmeric, red ginger, kencur and galangal. In these activities, students can learn these types of plants into useful food products through processing herbal drinks (herbal medicine) and aloe vera pudding that have potential economic value. While at Citra Berkat Primary School the revitalization activity was facilitated through the Ecopreneur Week activity. This activity is directed to train students to innovate in creating traditional Indonesian food creations with cooking class activities that utilize natural materials obtained from the school garden. The characteristics of each school in the aspect of social sustainability has been presented in Table 3.

### 3.4. Learning dimension

The ESD practices in all three schools are aimed at implementing ecoliteracy as shown in Table 4. This activity is intended to develop knowledge competencies, attitudes and skills students. All these competencies must be implemented in a balanced manner so that the goals of ecoliteracy can be achieved. Optimizing the development of knowledge competencies can be supported through constructive, contextual and authentic approaches, models and methods such as the contextual teaching learning (CTL) approach, problem based learning models (PBL) and investigative methods and so on. The application of the PBL model requires that learning situations and experiences can present actual problems by utilizing environmental conditions around students to be critically analyzed and directed to obtain alternative problem solving. The implementation at Citra Berkat Primary School is packaged by implementing through the stages of exploring, planning, doing, communicating, and reflecting.

Table 4. ESD aspects

No	Component	Al Irsyad Elementary School	Putat Gede I Elementary School	Citra Berkat Elementary School
1	Cognitive	Knowledge of the use of the environment as a source of learning	Introduction to nature and culture conservation.	Introduction to plant biodiversity.
2	Affective	Strengthening care, empathy, responsibility towards others and environmental sustainability.	Developing an attitude of tolerance by presenting diversity.	Development of caring attitude, empathy through direct interaction with the natural surroundings.
3	Behavior	Active participation in the use of simple technology vertical screen houses garden, mini zoo, hydroponics.	Planting activities and processing the results of the processing of hydroponic systems and family medicinal plants (TOGA).	Plant seeding activities to the maintenance process.
4	Cognitive-affective-behavior integration	Utilization of school facilities in the form of screenhouses to introduce plant development (cognitive), caring attitude and responsible care for (affective) activity of caring for plants (behavior).	Utilizing school resources in the form of introducing a variety of hydroponic plants and TOGA or Family Medicinal Plants (cognitive), sensitivity to environmental preservation (affective), and conservation activities both natural and cultural wealth (behavior).	Utilizing the school environment in the form of introduction of plant diversity (cognitive), caring attitude to maintain the school garden environment (affective) and plant seeding activities (behavior)

At Al Irsyad Primary School this ecoliteracy activity is practiced through learning activities in nature by utilizing the Screen House. In the implementation of learning, the teacher provides project activities concerning environmental preservation. Students are conditioned to gain learning experiences to discover new things based on observation activities, data collection to the proof stage. Ecoliteracy activities in this school are not only directed towards cognition but are expected to be able to imply the development of student attitudes. In detail, the stages of developing students' attitudes include (1) Developing empathy for all forms of life, namely learning that is emphasized on achieving the level of awareness and increasing students' empathy sensitivity through habituation or acculturation. Simultaneously, elementary schools in the city of Surabaya, including at Al Irsyad Primary School since 2015, have launched a "Healthy Breakfast" program aimed at training students' habit of reducing the use of plastic by carrying lunch boxes and drinking bottles (tumbler). In addition, several other activities that have been initiated and carried out at Al Irsyad Primary School include organic and inorganic waste sorting activities.

Similar activities have also been practiced at Citra Berkat Surabaya Primary School through activities (1) Outing-back to nature by facilitating students to carry out the stages of observation activities, followed by analysis and synthesis provided on the worksheet. Such activities can train students directly enjoy learning how to care for, maintain and use the environment around it well, (2) Anticipate unintended consequences, is a stage of learning that guides students to have the attitude of responsibility and consequences against the impact of an action. This learning is practiced through planting plants both with hydroponic growing media, soil, bricks and vertical gardens. During the learning activities, a student is given the responsibility to take care of the plants he plants by carrying out watering activities, checking the pH of the solution and nutrition regularly. Development of other ecoliteracy skills in the form of recycling inorganic waste into something more useful and processing organic waste into composting through composter media has been carried out independently by the three schools as presented in Table 4.

### 3.5. Discussion

In principle, ESD is a concept oriented to the priority of improving the quality of education and taking into account the contribution to the sustainability of the environmental, economic and social sectors [12]. Based on the results of research on the practice of ESD in Al Irsyad Elementary School, Putat Gede I Primary School and Citra Berkah Primary School Surabaya, it is known that the conceptions of the three schools in the City of Surabaya have attempted to translate the conception of sustainable development in education through a variety of activities that are generally manifested in conservation activities and ecoliteracy development. The key from the sustainable education model is reconnecting humans with nature and the environment [13].

Conservation activities include the stages of preservation, restoration, adaptation and reconstruction. Of the three schools known to have tried to implement a variety of environmental management activities. Character building and connection to nature during childhood which can last to the end of someone's life [14]. The various activities include the creation of green spaces, literacy parks, school gardens planted with various types of plants and pets; planting hydroponic plants through screen houses, urban framing, vertical gardens and family medicinal plants (TOGA) plants such as aloe vera, turmeric, red ginger, kencur and galangal; utilization of unused materials such as pipes and bricks left over from the construction; habituation practices such as plasticless systems through rewards and punishment, healthy breakfast habits, management of water resources by utilizing used ablution water as fish pond fillers; sorting organic and inorganic waste to be turned into compost; activities routinely treat plants by watering in the morning, checking the pH of the solution and providing nutrition regularly. Behavior to the environment is influenced by a caring attitude in protecting nature and treating it well and friendly [15].

ESD practices in schooling can promote the learning of skills, perspectives, and values needed to foster a sustainable society [16]. In addition, through this conservation practice is expected to be a positive provision for students in the future. This is in accordance with research on waste recycling activities that can provide long-term benefits in the form of changes in people's behavior from the original which only moved waste to manage and reuse waste [17]. Experience in various countries shows that public involvement in nature-based science has been shown to increase awareness of the importance of biodiversity as well as changes in pro environmental attitudes and attitudes [18]. By combining development and sustainability, development has acquired a new paradigm-with a philosophical basis for balancing and integrating aspects of the environment, economic problems and the progress of society [19].

Furthermore, the linkages between managing environmental aspects and social and economic aspects, the three schools translate into a number of activities including introducing and training students on economic activities (production, consumption, and distribution) through sales or entrepreneurial weeks of hydroponic and TOGA crops to school residents, parents and surrounding communities; school community participation and collaboration through cultural performance activities, empowering school culture as a manifestation of multicultural education and gender equality and making *Batik Gulijat* and the nation's rich culture. In the context of conservation, participation is considered as one of the most effective channels to resolve trade-offs in sustainable development [20]. Furthermore, for the development of ecoliteracy activities, the three schools have also tried to realize through a variety of learning activities including the use of green space/land as a source and learning experience; learning based on activities ranging from observation, data collection, data processing and analysis and withdrawal conclusion and presentation of group work results; project-based learning through exploring, planning, doing, communicating, and reflecting. When teachers adopt a holistic approach to teaching, students have a greater level of knowledge of environmental problems [21].

The success to translate the conception of sustainable development into practice depends very much on how the commitment of school residents (principals, teachers, students, and staff) are directed through strong and consistent leadership into various school policies and programs as well as support from various stakeholders. Factors supporting the success of inculcation of environmental care for students are greatly supported by the support of behavioral examples from principals, teachers and staff in schools [22]. These various programs can be integrated into curricular and extracurricular activities according to the autonomy of the school which makes the school environment a binding on social and economic aspects. To support the success of environmental sustainability, it is necessary to pay attention to the structure of the economic system and the social system [23]. Teacher education institutions in Scotland require that the scope of sustainable development be included in education programs for both prospective applicants and students to learn about sustainability as a core element of professional educational standards [24]. Reorienting teacher education is recommended to adopt teaching skills development in the context of risk, vulnerability, and uncertainty [25]. Some of the ESD practices implemented in the third Primary School are at least in line with the agenda in many developed countries such as Europe and North America where these countries have

debated ESD into the curriculum of themes to be included in the syllabus of subjects, textbooks, learning assessments and pedagogical methods [26].

Based on the connection of the three main aspects of ESD, it is clear that practices implemented in school are still predominantly focused on environmental activities. In addition, when viewed from the typology of environmental management, ESD practices carried out in the three schools are reformist management that is indicated by the change in the use of idle land to open land, the use of unused materials. Management of reformers use problem-solving approach and the ecosystem approach, although often both simple by changing a small part, is an adaptation and not to enter/influence the decision-making process of higher [27]. In addition, when viewed from the classification of forms of environmental care, the practice of ESD in the three schools is included in the new environmentalism, namely the community's efforts to create social and economic sustainability through lifestyle choices that are manifested into daily practices such as the use of disposable plastic materials, electric vehicle usage, and so on. Changes in the concept of ESD from its inception as a process of 'creating awareness' and the socialization of behavior change can transform into a learning process encouraging active and participatory engagement [28].

Although viewed from an environmental management perspective it is still limited and simple, but the ESD practices that have been implemented in the three elementary schools have at least shown concrete commitment and action. The implementation of ESD values in education units starts from the simple terms of the new environmental concept and then encompasses a complex and holistic approach to the social and economic fields [29]. Adopting an interdisciplinary approach can facilitate educational practices for sustainable development [30]. Good practices that can be adopted and disseminated include eco-school activities through the utilization and optimization of natural resources by observing conservation, linkages with social and economic aspects through ecopreneur and involvement of community participation as well as local government support through the *Tunas Hijau* organization and BLH of Surabaya City through Adiwiyata activities. Community and local community involvement is essential to develop and implement a more effective environmental management system for ecosystems and biodiversity [31].

In addition, another good practice in the three schools is the implementation of an ecoliteracy program such as learning in the environment through the use of screen houses, project-based learning to make hydroponic plants, learning practices for managing organic waste, and implementing the stages of exploration, planning, action, communication and reflection in learning. Eco literacy is an awareness that nature and humans influence each other in all aspects of their lives to form a sustainable society that is aware of the importance of protecting the environment [32]. The main goal of ecoliteracy is to build interactions between living things and the natural environment in shared life on planet Earth, through aspects of knowledge, attitudes and skills. Environmental literacy provides knowledge, and students can use that knowledge to make decisions about environmental problems [33]. Through ecoliteracy, in turn students are expected to realize the importance of establishing connections to nature at the earliest possible time; increasing direct contact with the natural environment relating to physical, social, mental, and spiritual health; connection with nature expected to increase awareness and empathy for nature and foster ecological behavior [34]. In order to lead to a complete understanding of the meaning of quality education, it is necessary to consider the insights which are provided by environmental education sustainability and ESD [35].

#### 4. CONCLUSION

Based on ESD practices implemented in three elementary schools in Surabaya, namely SD Al Irsyad, SD Putat Gede I and SD Citra Berkah Surabaya have been supported with school policies and programs. In addition, a number of indicators of sustainable development in the field of education are already visible even though the interrelationship of the three environmental, social and economic aspects is still not fully integrated and the scope is limited and simple in nature. First, ESD practices at Al Irsyad Surabaya Primary School are focused on the implementation of environmental preservation programs by trying to be associated with social and economic aspects through involving the participation of school residents and the community in utilizing the yields of school gardens and learning practices by utilizing the environment as learning. Second, ESD practices at SD Citra Berkah Surabaya are focused on the POE program through socio-economic activities by utilizing the environment as a supporting element. The concepts applied are still separated between environmental, social and economic aspects. However, through the use of the environment students have been facilitated through project-based learning, oriented towards producing products and cultural appreciation with the concept of Outing-Back to Nature. Third, ESD practices at SDN Putat Gede I Surabaya are focused more on social environmental activities. The main strategy is realized through greening programs, self-habituation of healthy living, the use of school garden products, participatory involvement of school residents by upholding tolerance to gender differences and equality.

## REFERENCES

- [1] UNESCO, "UN Decade of ESD," *Educ. Sustain. Dev.*, 2014.
- [2] M. Cars and E. E. West, "Education for sustainable society: attainments and good practices in Sweden during the United Nations Decade for Education for Sustainable Development (UNDESD)," *Environment, Development and Sustainability*, vol. 17, no. 1, pp. 1-21 2014, doi: 10.1007/s10668-014-9537-6.
- [3] C. Borg, N. Gericke, H. O. Höglund, and E. Bergman, "Subject- and experience-bound differences in teachers' conceptual understanding of sustainable development," *Environ. Educ. Res.*, vol. 20, no. 4, pp. 526-551 2014, doi: 10.1080/13504622.2013.833584.
- [4] B. Giddings, B. Hopwood, and G. O. Brien, "Environment, economy and society: fitting them together into sustainable development," *Sustainable Development*, vol. 10, no. 4, pp. 187-196, 2002, doi: 10.1002/sd.199.
- [5] United Nations. General Assembly, "Transforming our world: the 2030 Agenda for Sustainable Development. Resolution adopted by the General Assembly on 25 September 2015," *Gov. through Goals Sustain. Dev. Goals as Gov. Innov.*, 2015, doi: 10.7551/mitpress/9780262035620.003.0011.
- [6] F. Rauch, "The potential of education for sustainable development for reform in schools," *Environmental Education Research*, vol. 8, no. 1, pp. 43-51, 2002, doi: 10.1080/13504620120109646.
- [7] S. Birdsall, "Measuring student teachers' understandings and self-awareness of sustainability," *Environmental Education Research*, vol. 20, no. 6, pp. 814-835. 2014, doi: 10.1080/13504622.2013.833594.
- [8] E. Sinakou, J. Boeve-de Pauw, M. Goossens, and P. Van Petegem, "Academics in the field of Education for Sustainable Development: Their conceptions of sustainable development," *J. Clean. Prod.*, vol. 184, pp. 321-332. 2018, doi: 10.1016/j.jclepro.2018.02.279.
- [9] F. N. Simanjuntak, "Education for sustainable development (*in Bahasa*)," *Jurnal Dinamika Pendidikan*, vol. 10, no. 2, pp. 169-195, 2018, doi: 10.33541/jdp.v10i3.634.
- [10] T. Berglund and N. Gericke, "Separated and integrated perspectives on environmental, economic, and social dimensions – an investigation of student views on sustainable development," *Environmental Education Research*, vol. 22, no. 8, pp. 1115-1138, 2016, doi: 10.1080/13504622.2015.1063589.
- [11] S. Rezkita and K. Wardani, "The integration of environmental education forms a caring character for the environment in elementary schools/*Pengintegrasian pendidikan lingkungan hidup membentuk karakter peduli lingkungan di sekolah dasar*," *J. ke-SD an*, vol. 4, no. 2, 2018.
- [12] UNESCO, *Education for Sustainable Development Education for Sustainable Development in Action - SourceBook*. 2012.
- [13] F. M. Martínez-Rodríguez, M. de los Ángeles Vilches Norat, and A. Fernández-Herrera, "Challenging the neoliberal view of education: the Center for Ecoliteracy as a transformative educational practice," *Globalizations*, vol. 15, no. 3, pp. 422-436, 2018, doi: 10.1080/14747731.2018.1446601.
- [14] B. K. Haywood, J. K. Parrish, and J. Dolliver, "Place-based and data-rich citizen science as a precursor for conservation action," *Conserv. Biol.*, vol. 30, no. 3, pp. 476-486, 2016, doi: 10.1111/cobi.12702.
- [15] N. Špur, S. Škorník, and A. Šorgo, "Influence of attitudinal dimensions on children's interest in preserving extensive grasslands," *Journal of Rural Studies*, vol. 72, pp. 23-36, 2019, doi: 10.1016/j.jrurstud.2019.09.011.
- [16] R. Laurie, Y. Nonoyama-Tarumi, R. McKeown, and C. Hopkins, "Contributions of Education for Sustainable Development (ESD) to Quality Education: A Synthesis of Research," *Journal of Education for Sustainable Development*, vol. 10, no. 2, pp. 226-242, 2016, doi: 10.1177/0973408216661442.
- [17] M. M. Solihin, P. M., and D. S., "Participation of Housewives in Waste Management through a Garbage Bank in Ragajaya Village, Bojonggede-Bogor, West Java (*in Bahasa*)," *Jurnal Ilmu Lingkungan*, vol. 17, no. 3, pp. 388-398, 2019, doi: 10.14710/jil.17.3.388-398.
- [18] S. G. Schuttler, A. E. Sorensen, R. C. Jordan, C. Cooper, and A. Shwartz, "Bridging the nature gap: can citizen science reverse the extinction of experience?," *Frontiers in Ecology and the Environment*, vol. 16, no. 7, pp. 405-411, 2018, doi: 10.1002/fee.1826.
- [19] R. N. Gorana and P. R. Kanaujia, "Schooling for Sustainable Development in South Asian Countries," in *Reorienting Educational Efforts for Sustainable Development*, pp. 1-19, 2016.
- [20] R. P. Bixler, J. Dell'Angelo, O. Mfune, and H. Roba, "The Political Ecology of Participatory Conservation," *Journal of Political Ecology*, vol. 22, no. 1, pp. 164-182, 2015, doi: 10.2458/v22i1.21083.
- [21] J. B. de Pauw, N. Gericke, D. Olsson, and T. Berglund, "The effectiveness of education for sustainable development," *Sustainability*, vol. 7, no. 11, pp. 15693-15717. 2015, doi: 10.3390/su71115693.
- [22] W. O. Susilawati and H. Widodo, "Strategy of teachers in supporting environmentally sustainable development," vol. 13, no. 2, pp. 247-254, 2019, doi: 10.11591/edulearn.v13i2.12167.
- [23] J. H. Spangenberg, "Environmental space and the prism of sustainability: Frameworks for indicators measuring sustainable development," *Ecological indicators*, vol. 2, no. 3, pp. 295-309, 2002, doi: 10.1016/S1470-160X(02)00065-1.
- [24] S. Martin, J. Dillon, P. Higgins, G. Strachan, and P. Vare, "Reflections on ESD in UK schools," in *Schooling for Sustainable Development in Europe: Concepts, Policies and Educational Experiences at the End of the UN Decade of Education for Sustainable Development*, pp. 335-360, 2015.
- [25] R. Chineka and C. Mukundu, "Integrating School Community Concerns in Framing ESD and Educational Quality," in *Schooling for Sustainable Development in Africa*, pp. 141-152, 2017.
- [26] A. Benavot, "Education for Sustainable Development in Primary and Secondary Education," no. October, p. 43, 2014, doi: 10.13140/RG.2.1.1978.9283.
- [27] R. Mathevet, F. Bousquet, and C. M. Raymond, "The concept of stewardship in sustainability science and

conservation biology," *Biological Conservation*, vol. 217, pp. 363-370, 2018, doi: 10.1016/j.biocon.2017.10.015.

[28] R. O'Donoghue, "Situated Learning in Relation to Human Conduct and Social-Ecological Change," in *Schooling for Sustainable Development in Africa*, pp. 25-38, 2017.

[29] N. Listiawati, "Implementation of Education for Sustainable Development by Several Institutions (in Bahasa)," *Jurnal Pendidikan dan Kebudayaan*, vol. 19, no. 3, pp. 430-450., 2013, doi: 10.24832/jpnk.v19i3.302.

[30] A. B. A. Avelar, K. D. da Silva-Oliveira, and R. da S. Pereira, "Education for advancing the implementation of the Sustainable Development Goals: A systematic approach," *International Journal of Management Education*, pp. vol. 17, no. 3, 100322, 2019, doi: 10.1016/j.ijme.2019.100322.

[31] E. S. Brondizio and F. M. Le Tourneau, "Environmental governance for all," *Science*, vol. 52, no. 6291, pp. 1272-1273, 2016, doi: 10.1126/science.aaf5122.

[32] D. Wardaniah, I. D. Lestari, and E. Ramdhayani, "Student Ecoliteracy through Group Investigation Based Waste Management Activities at SMAN 1 Moyo Utara Academic Year 2017/2018 (in Bahasa)," *Klasikal J. Educ. Lang. Teach. Sci.*, 2019.

[33] J. A. King and R. L. Franzen, "Environmental Literacy in Environmentally Themed Higher Education Courses," *Journal of Sustainability Education*, vol. 13, 2017.

[34] H. D. Wallace, "Transdisciplinary learning in a kitchen garden: connecting to nature and constructing a path to ecoliteracy?," *Int. Res. Geogr. Environ. Educ.*, vol. 28, no. 4, pp. 309-323, 2019, doi: 10.1080/10382046.2019.1646013.

[35] H. Lotz-Sisitka and J. Lupele, "ESD, Learning and Quality Education in Africa: Learning Today for Tomorrow," in *Schooling for Sustainable Development in Africa*, 2017.