

Building Ecoliteracy Through Adiwiyata Program (Study at Adiwiyata School in Banda Aceh)

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Abstract This study is back grounded by importance of ecoliteracy for each individual in the effort to embody sustainable community. One of comprehensive efforts to build ecoliteracy in community since early is through Adiwiyata Program. Based on this, this study is aimed to find out how the effectiveness of Adiwiyata Program in the effort to build students' ecoliteracy in Banda Aceh. The method which is used is survey. The study is conducted in ten schools, with respondents are principal/vice principal, teachers, administrative staff and students. Data analysis is done descriptively toward independent variable and dependent variable and hypothesis test use non parametric statistic test. The result of study showed that there is positive and significant influence of school policy, curriculum implementation, school culture and school infrastructure management toward students' ecoliteracy. The findings of study is the more effective four components of Adiwiyata is implemented, the higher of students' ecoliteracy. Therefore, four components of Adiwiyata should be implemented maximally in each school, among other by strengthening Adiwiyata school team.

Keywords: Adiwiyata Program, Ecoliteracy

Abstrak Penelitian dilatarbelakangi oleh pentingnya ecoliteracy bagi setiap individu dalam upaya mewujudkan masyarakat berkelanjutan. Salah satu upaya komprehensif untuk membangun ecoliteracy pada masyarakat sejak dini adalah melalui Program Adiwiyata. Berdasarkan hal ini penelitian ini bertujuan mengetahui bagaimanakah efektifitas Program Adiwiyata dalam upaya membangun ecoliteracy siswa di Kota Banda Aceh. Metode yang digunakan adalah survei. Penelitian dilaksanakan di sepuluh sekolah, dengan responden yaitu kepala/wakil kepala sekolah, guru, pegawai administrasi dan siswa. Analisis data secara deskriptif dilakukan terhadap variabel bebas dan terikat serta pengujian hipotesis menggunakan uji statistik non parametrik. Hasil penelitian menunjukkan bahwa terdapat pengaruh yang positif dan signifikan kebijakan sekolah, implementasi kurikulum, budaya sekolah dan pengelolaan prasarana sekolah terhadap ecoliteracy siswa. Temuan penelitian adalah semakin efektif keempat komponen Adiwiyata diimplementasikan maka ecoliteracy peserta didik semakin tinggi. Karena itu empat komponen Adiwiyata harus diimplementasikan dengan maksimal di setiap sekolah, diantaranya dengan memperkuat tim Adiwiyata sekolah.

Kata kunci: Ecoliteracy, Program Adiwiyata

1. Introduction

Human life is not detached from interaction with their environment. The fast growth of population and life standard improvement is the cause of the needs which increase significantly toward natural resources [Kayihan & Tonuk, 2012]. The development of science and technology has made human more capable to change/destroy environment and ecosystem balance [Armawi, 2010]. Therefore, in the effort to face the environmental challenges in the earth, there is need to educate and give information about environmental problem to people [Hallfreosdottir, 2011]. This become big challenge for educator particularly environmental educator in order

to prepare students who are able to actively participate as members of sustainable community in the effort to embody healthy world ecologically [Capra, 2007]. In order to embody sustainable community, individual who has ecoliteracy is needed. Ecological literacy (ecoliteracy) is a term used by Capra to describe human who had achieved high awareness level of the importance of life environment [Keraf, 2013]. The term ecoliteracy is more than a measurement of one's ecology knowledge, but also to measure one's ability and willingness to use that knowledge for sustainable life style [Monaghan & Curthoys, 2008]. Ecoliteracy try to introduce and renew people understanding about the importance of global ecology awareness, in order to create the balance between people needs and earth capacity to sustain it [Pitman & Daniels, 2016]. According to Puk & Behm [2003], in education field ecoliteracy should become main focus in curriculum in the effort to face serious challenge of environment problem in the future. Ecoliteracy not only direct us to understand ecology concept, but to understand the place in an ecosystem [Meena & Alison, 2009]. Ecoliteracy equip individual with knowledge and competence which is needed to overcome complex and

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urgent environmental problem integrally and enable students to help in embody sustainable community who do not destroy ecosystem [Barnes, 2013]. According to Keraf [2014] in order to accelerate the embodiment of sustainable community based on ecoliteracy at least there are two efforts which should be done. Firstly, ecoliteracy should be understood and practiced as a life pattern or culture of all community members. Secondly, the willingness of government politic is needed to drive the embodiment of sustainable community based on ecoliteracy through various policies and real program which is implemented consistently. In global scale, one comprehensive program to shape individual who has ecology literacy is through Eco School program. In Indonesia, Eco School program is implemented through Adiwiyata program. Adiwiyata program is implemented since 2006. Adiwiyata program is developed by Ministry of Environmental Affairs with aimed to encourage and create school which is care about environment and has environmental culture which capable to participate and implement the effort to preserve the environment and sustainable development [National Adiwiyata Team, 2013]. It is hoped that through Adiwiyata each school member is involved in school activity toward healthy environment so it will create school members who is responsible in the effort of environment preservation and protection through good school governance to support sustainable development [National Adiwiyata Team, 2013]. The result of study which was conducted by Sumarlin [2012] in SMP 2 and SMP 17 Kendari showed that students' care level toward school environment management through Adiwiyata program in SMPN 2 Kendari the majority is categorized moderate, whereas in SMPN 17 Kendari the majority is categorized high. In global scale, the result of study by Ozsoy et al [2012] showed that Eco School Program is success/effective in enhancing students' knowledge, attitude and care toward environment, but in Spinola's study [2015], Krnel & Naglic [2009], and Pauw & Van Petergem [2013] showed that Eco School program is fail/less effective in enhancing students' knowledge, attitude and care toward environment. Based on study above there are various results concerning the success of Eco School and Adiwiyata program implementation. According to Kayihan and Tonuk [2013], this is a normal thing, because each school and geographical region have different strength and weakness. Banda Aceh which is developed rapidly after earthquake and tsunami disaster in 2004, today as the population increase begin to face environmental problem, particularly flood and garbage problems. In response to this problem, in 2011 The Environmental Office in Banda Aceh begin to socialize Adiwiyata Program to schools in region of Banda Aceh. Until 2015, Adiwiyata Program had been followed by more than 40 schools from elementary to secondary level in Banda Aceh. Based on this the author is interested to

find out how the effectiveness of Adiwiyata Program in the effort to build students' ecoliteracy in Banda Aceh. In more detail, the aim of this study is to find out:

1. How the effectiveness of school policy, curriculum implementation, school culture and infrastructure management of Adiwiyata school in Banda Aceh City collectively in the effort to build students' ecoliteracy.
2. How the effectiveness of school policy which is applied in Adiwiyata school in Banda Aceh City in the effort to build students' ecoliteracy.
3. How the effectiveness of curriculum implementation in Adiwiyata school in Banda Aceh City in the effort to build students' ecoliteracy.
4. How the effectiveness of school culture which is build in Adiwiyata school in Banda Aceh City in the effort to build students' ecoliteracy.
5. How the effectiveness of infrastructure management of Adiwiyata school in Banda Aceh City in the effort to build students' ecoliteracy.

2. The Methods

This study use quantitative research paradigm by using survey technique. The location of study is in Elementary School, Junior High School and Senior High School in Banda Aceh. Respondent/data source of this study are principal/vice principal, coordinator staff of Adiwiyata School, teachers, administrative staff, and students. Data Collection is done through questionnaire, test and observation. Instrument of study is developed based on component and indicator of Adiwiyata school which is issued by Ministry of Environmental Affairs and measurement instrument of ecoliteracy is developed based on core competence of ecoliteracy which is issued by The Center for Ecoliteracy [2013]. Variables which are observed in this study are school policy (X1), curriculum implementation (X2), school culture (X3), school infrastructure management (X4) and ecoliteracy (Y), and relation among variables such as Figure 1. Because the numbers of school sample/analysis unit is small, then data analysis in this study use non parametric statistic test. Non parametric statistic is frequently refer to free distribution statistic. First hypothesis test is done by interpreting the result of Kendall's Concordance Test, whereas hypothesis test between two variables (hypothesis 2-5) is done by interpreting test result of Kendall's Tau Correlation. The mechanism of test is done by comparing significance value of calculation result with significance value (probability) of 0.05. The decision taken use criteria "if calculation significance value is < 0.05 ; then H_0 is rejected", and "if calculation significance value is > 0.05 ; then H_0 is accepted." Hypothesis test is done by IBM SPSS 21 software.

Table 1. The Numbers of Respondent Based on Status and Origin of School

School	Status						Total	(%)
	Principal/ Vice Prin- cipal	Adiwiyata Coordi- nator	Teachers	Administrative Staff	Students			
SD 2	1	1	3	1	37	43	9.51	
SD 16	1	1	3	1	27	33	7.30	
SD 20	1	1	3	1	23	29	6.41	
SD 67	1	1	3	1	20	26	5.75	
SMP 1	1	1	4	2	42	50	11.06	
SMP 2	1	1	4	2	41	49	10.84	
SMP 19	2	1	4	2	21	30	6.64	
MTsN Model	2	1	4	2	71	80	17.70	
SMA 3	1	1	5	2	47	56	12.39	
SMA 4	1	1	5	2	47	56	12.39	
Total	12	10	38	16	376	452	100.00	

Source: primary data

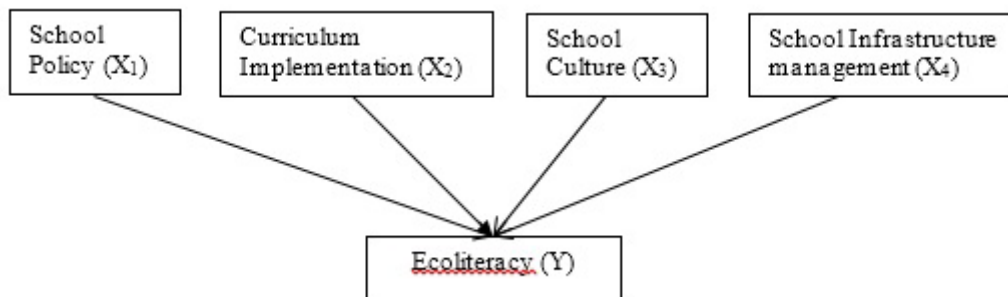


Figure 1. Relation Among Research Variables

3.Result and Discussion

From analysis result it is found out that the highest total score (sum) is 2225.17 and the highest mean score is 222.51 is in ecoliteracy variable (Y), whereas the lowest total score (sum) is 806.89 and the lowest mean score is 80.68 is school culture variable (X3). Similarly, in deviation standard, the highest is in ecoliteracy variable (Y) of 7.67, whereas the lowest in school infrastructure management variable (X4) of 1.57.

The first hypothesis is “there is positive and significant influence of school policy, curriculum implementation, school culture and school infrastructure management collectively toward students’ ecoliteracy.” The first hypothesis test is done by Kendall’s concordance test. Based on first hypothesis test between variables of school policy, curriculum implementation, school culture, infrastructure management and ecoliteracy can be interpreted that Kendall’s concordance coefficient (Kendall’s W) which is obtained is 1.00 (Table 3); which meant that those five variables have perfect concordance, so it can be stated that magnitude of influence of school policy, curriculum implementation, school culture, and school infrastructure management

collectively toward ecoliteracy is 100%. Then, significance value of calculation result which is obtained is $0.000 < 0.05$; then H_0 is rejected and H_a is accepted. Based on this analysis result and test, then first hypothesis proposed can be accepted.

The second hypothesis is “there is positive and significant influence toward students’ ecoliteracy.” The test is done by using Kendall’s Tau Correlation. Based on analysis result, coefficient of correlation of 0.660 and significance level of 0.010 are obtained. The magnitude of school policy influence toward students’ ecoliteracy is $(0.660)^2 = 43.5\%$. It means that 43.5% of students’ ecoliteracy is influenced by school policy, the rest of 56.5% is influenced by another factor. Based on criteria used, the significance of calculation is $0.010 < 0.05$; then H_0 is rejected and H_a is accepted. Based on this analysis result and test, then second hypothesis proposed can be accepted. The third hypothesis is “there is positive and significant influence of curriculum implementation toward students’ ecoliteracy.” The test is done by Kendall’s Tau Correlation. Based on analysis result, coefficient of correlation at 0.629 and significance level at 0.012 are

Table 2. Descriptive Statistic of Study Result

Variables	N	Min.	Max.	Sum.	Mean	SD	Var.
School Policy (X1)	10	92.00	99.00	968.00	96.80	2.25	5.06
Curriculum (X2)	10	109.40	124.75	1184.46	118.44	4.28	18.38
School Culture (X3)	10	74.27	92.60	806.89	80.68	6.23	38.89
Infrastructure (X4)	10	100.00	106.00	1036.00	103.60	1.57	2.48
Ecoliteracy (Y)	10	212.47	235.75	2225.17	222.51	7.67	58.90
Valid N (listwise)	10						

Source: primary data processing

Table 3. Result Data of Kendall's Concordance

Total N	10
Kendall's W	1.000
Test Statistic	40.000
Degrees of Freedom	4
Asymptotic Sig. (2-sided test)	.000

Source: primary data processing

obtained. The magnitude of curriculum implementation toward students' ecology literacy is $(0.629)^2 = 39.5\%$. It means that 39.5% of students' ecoliteracy is influenced by curriculum implementation, the rest of 60.5% is influenced by another factor. Based on criteria used, then the significance of calculation is $0.012 < 0.05$; then H_0 is rejected and H_a is accepted. Based on analysis result and test, then third hypothesis proposed can be accepted. The fourth hypothesis is "there is positive and significant influence of school culture toward students' ecoliteracy." The test is done by Kendall's Tau Correlation. Based on analysis result, coefficient of correlation at 0.822 is and significance level at 0.001 are obtained. The magnitude of curriculum implementation influence toward students' literacy is $(0.822)^2 = 67.5\%$. It means that about 67.5% of students' literacy is influenced by school culture, the rest of 32.5% is influenced by another factor. Based on criteria used, then significance of calculation is $0.001 < 0.05$; then H_0 is rejected and H_a is accepted. Based on these analysis result and test, then fourth hypothesis proposed can be accepted. The fifth hypothesis is "there is positive and significant influence of school infrastructure management toward students' ecoliteracy." The test is done by Kendall's Tau Correlation. Based on analysis result coefficient of correlation at 0.845 and significance level at 0.001 are obtained. The magnitude of school infrastructure management influence toward students' ecoliteracy is $(0.845)^2 = 71.4\%$. It means that about 71.4% of students' ecoliteracy is influenced by school infrastructure management, the rest of 28.6% is influenced by another factor. Based on criteria used, then significance of calculation is $0.001 > 0.05$; then H_0 is rejected and H_a is accepted. Based on these analysis result and test, then the fifth hypothesis proposed can be accepted.

When the earth is in crisis as today, each school should develop policy in order to create human

resource who have ecoliteracy and capable to participate in the effort to save the earth from ecology crisis. Therefore, the effort to embody ecoliteracy should become the policy in all schools in all levels, as suggested by Edwards and Cutter-Mackenzie [2006] "at the international policy level, eco-literacy (formerly referred to as environmental literacy) has been identified as an important change agent in working toward sustainability at all levels of education." One's ecoliteracy is influenced by various factors, then comprehensive effort is needed to enhance ecoliteracy. Adiwiyata program is comprehensive program in the effort to enhance students' ecoliteracy. The implementation of Adiwiyata's four components very influence the success or failure of Adiwiyata policy implementation in school. The implementation of those four components will show the characteristic of school which care about environment that differentiate it from another school. Those four components cannot be separated from one of another. If one component not operated well, then the goal achievement will not maximal too. From the finding in field in all schools, the policy concerned with the effort to preserve environment had been articulated in school policy and had contained in school curriculum. Five schools implement Environmental Study by using monolithic approach, which means that school had included Environmental Study in curriculum as self-contained subject in group of required subjects or local content. Another four schools use integration approach, that is not include Environmental Study specially in curriculum, but the effort to preserve environment, prevent the destruction of environment is integrated into another subjects, such as Social Science, Natural Science, Geography, Biology, Chemistry, Islamic Education, etc. Based on finding in field, theoretically students are

equipped and given the material which is related with environment. Students also are given the assignment which is related with environment, in order to make students practice in solving global and local environmental problems. Practically, students are given the activity to love and care about environment, even though only clean the classroom. It is hoped that this theory and practice not only add students' knowledge, but also can enhance students' skill and care toward environment. According to Bruyere [2008] to achieve ecoliteracy, students should acquire the knowledge about ecological principle, sensitivity and care toward environment, and the action that can be contribute to ecosystem survival. Nevertheless, according to Esposito [2009] by understanding what is ecosystem, how it function, and how to organize them through systems-based level for sustainability which is known as ecoliteracy. It is hoped that it can embody sustainable community who can participate to save the earth. From finding in field, it is seen from profile of ten schools, that schools' vision, mission and goal had contain the effort to preserve and manage the environment. The socialization of schools' vision, mission, and goal is done through poster, wall magazine, socialization at the time of flag ceremony and socialization by teacher in class. The policy about the effort to preserve and manage the environment and socialization is important, because as shown by study result of Saputro & Liesnoor [2015] that this can create sense of shared care to protect and manage school environment. Therefore, according to Yusnidar et al [2015] in realizing Adiwiyata program it is needed the serious effort of all components among other principal effort, participation of school members and community support in order to create the condition of clean, beautiful, and comfortable environment as realization of Adiwiyata program. The result of study showed that school had implemented various programs and activities which related with environment by involving all school members such as clean the classroom, mutual cooperation, cleaning competition, make and maintain the park, cultivate the medication plant, etc. Students' involvement actively in various school activities, particularly in activity to protect and manage the environment in school not only give insight about environment to students, but also can instill eco-friendly attitude, action and skill, as suggested by Monaghan & Curthoys [2008] that ecoliteracy will easier to be instilled in students through development of eco-friendly culture in school. Similarly, McGinn [2014] suggested that to enhance ecoliteracy it is not enough only through traditional learning in class, but it should be supported by another program outside the class. In Adiwiyata program, school should be supported by adequate infrastructure. School infrastructure should be eco-friendly managed by involving all school members. Result of field observation showed that the condition of school building in all schools is very good.

All classroom have window for air and light ventilation. Cleaning equipment, separated garbage bin, recycle site, and school park are available in all schools. But the availability of school infrastructure based on result of study has not been utilized maximally to support learning, such as garbage which is not wasted appropriately in which plastic garbage is thrown away into organic garbage bin, and vice versa. Result of study similar with finding of study conducted by Saputro & Liesnoor [2015] that school members attitude in garbage management is in low category. This is because their lack of care in garbage management. According to Kayihan & Tonuk [2012], garbage management become most significant problem as a result of industrialization. Therefore, now there are various strategies in garbage management, among other by promoting garbage recycle and utilizing organic garbage as alternative energy source which is eco-friendly. In school infrastructure management by involving school members directly, school members are trained to always use daily equipment which is eco-friendly and utilize it efficiently, so it is hoped that it can enhance their ecoliteracy. Ecoliteracy not only the ability to identify, classify and distinguish environmental aspects, but included the ability to react and participate in decision making process to solve environmental issue and problem [Locke et al., 2013]. Ecoliteracy individual is prepared to become member of sustainable community, by combination of head, heart, hand abilities and spirit, which included world understanding and participative action in and with environment [McBride et al., 2013].

4. Conclusion

There is positive and significant influence of school policy, curriculum implementation, school culture and school infrastructure management collectively toward students' ecoliteracy. This shows that to achieve the maximal result, the four components of Adiwiyata should be implemented wholly and it cannot implemented partially. There is positive and significant influence of school policy toward students' ecoliteracy. This can be accepted because school policy is main foundation for school to implement another component. There is positive and significant influence of curriculum implementation toward students' ecoliteracy. This can be accepted because curriculum implementation is operation of curriculum script into learning, and learning is main component of each education unit. There is positive and significant influence of school culture toward students' ecoliteracy. This indicate that to build ecoliteracy it is not enough only through learning in class, but also school culture which is rooted in all school members should be build. There is positive and significant influence of school infrastructure management toward students' ecoliteracy. This can be understood because infrastructure is main component which support learning in school.

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