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EXISTENTIAL INTELLIGENCE AND PRO-ENVIRONMENTAL BEHAVIOR OF STUDENTS IN ADIWIYATA AND NON-ADIWIYATA SCHOOLS: ARE THEY DIFFERENT?

阿迪維亞塔和非阿迪維亞塔學校學生的存在智能和親環境行為：它們不同嗎？

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2 Abstract

This study aims to analyze differences in existential intelligence and pro-environmental behavior of students in *Adiwiyata* and non-*Adiwiyata* schools. The article describes a new idea of predicting pro-environmental behavior based on existential intelligence among high school students at *Adiwiyata* and non-*Adiwiyata* schools. This idea allows us to determine the differences in pro-environmental behavior between *adiwiyata* and non-*adiwiyata* schools. A total of 1,539 respondents participated in April-June 2021, consisting of students of *Adiwiyata* and non-*Adiwiyata* high schools in Semarang. The data were analyzed using Mann Withney Statistic Non-Parametric method. The new method effectiveness evaluation is confirmed by the calculation hypothesis testing using non-parametric statistics with the Mann-Whitney test. If significance (Sig.) < 0.05, then the hypothesis is supported empirically, and if Sig. > 0.05, then the hypothesis is not supported empirically. The results show that the existential intelligence of students in *Adiwiyata* schools is higher than the ones in non-*Adiwiyata* schools. Further, the pro-environmental behavior of students in *Adiwiyata* schools is also higher than the ones in non-*Adiwiyata* schools, confirming the differences in pro-environmental behavior of *Adiwiyata* and non-*Adiwiyata* schools through existential intelligence contribute to scientific novelty in this study. Increasing pro-environmental behavior can be done by increasing existential intelligence.

Keywords: Existential Intelligence, Pro-Environmental Behavior, *Adiwiyata* Schools, Non-*Adiwiyata* Schools

17 摘要

本研究旨在分析阿迪維亞塔和非阿迪維亞塔學校學生的存在智能和親環境行為的差異。文章描述了一種基於存在智能預測阿迪維亞塔和非阿迪維亞塔學校高中生親環境行為的新思路。這個想法使我們能夠確定阿迪維亞塔和非阿迪維亞塔學校之間的親環境行為差異。2021年4月至6月共有1,539名受訪者參加，其中包括三寶壟的阿迪維亞塔和非阿迪維亞塔高中的學生。使用曼惠特尼統計非參數方法分析數據。新方法的有效性評估通過使用非參數統計和曼惠特尼檢驗的計算假設檢驗得到證實。如果意義 <0.05 ，則假設得到經驗支持，如果意義 >0.05 ，則該假設在經驗上不受支持。結果表明，阿迪維亞塔學校學生的存在智力高於非阿迪維亞塔學校學生。此外，阿迪維亞塔學校學生的環保行為也高於非阿迪維亞塔學校的學生，通過存在智能確認阿迪維亞塔和非阿迪維亞塔學校的親環境行為的差異有助於本研究的科學新穎性。可以通過增加存在智能來增加親環境行為。

关键词: 存在智能、環保行為、阿迪維亞塔學校、非阿迪維亞塔學校

I. INTRODUCTION

Educational challenges on environmental issues are related to integrating various perspectives and concepts of a sustainable environment for students, establishing systematic and holistic thinking, and finding innovative ways to help students behave pro-environmentally [1]. One concept that can be offered to predict pro-environmental behavior is existential intelligence. Existential intelligence refers to the ability to discover oneself in terms of the furthest reaches of the infinite and immense cosmos, including human existence, the meaning of death, the ultimate destiny of the physical and psychological world, or the deep experience of love for another person [2]. It can also be defined as the human tendency to develop and consider carefully the fundamental questions of the existence of life and death [2] or a person's ability to live and realize his existence correctly in the world with his life's purpose [3]. [4] showed that multiple intelligences, one of which is existential intelligence, provide a more positive attitude towards the environment and a high level of concern for environmental damages [5]. This existential intelligence has the highest order among students [6] and is a strong predictor for environmental-based schools [7].

This existential intelligence allows us to become one with nature and in tune with the processes of life, urging us to seek wholeness, a sense of community, and a sense of connection. In other words, it can be described as the peak experience proposed by Maslow [8]. The awareness of supreme values and meanings, peak experiences, feelings of transcendence, and high awareness are all part of the core experience of spiritual intelligence. [9] stated that to be involved in the environment requires spiritual intelligence [2] referred it as existential

intelligence) by developing the transpersonal potential of each individual involved, it can contribute either directly or indirectly in interacting with others and the environment and how to develop a sustainable pro-environmental behavior. This transpersonal perspective is a perspective that deals with self-development in a more altruistic relationship with oneself, others, and the environment in which they live. This study further emphasizes that spiritual intelligence is crucial in the self-actualization of the environment that will shape pro-environmental behavior in the future.

There are 16 districts in Semarang with 74 senior high schools, consisting of 16 public schools and 58 private schools. Meanwhile, there are 14 environmental-based state schools or *Adiwiyata* public schools and 4 *Adiwiyata* private schools. Therefore, 18 *Adiwiyata* high schools (24%) out of 74 high schools are in Semarang. Further, [10], who studied a case in Malang, East Java, showed that the implementation of *Adiwiyata* school had not been carried out optimally. They found several reasons behind it, including the students, had not fully understood the concept of environmental care, attitudes showing less care about the environment, the absence of empathy for the impact of environmental damages, the lack of enthusiasm for environmental damage, and the lack of direct participation in the environment. This indicates a lack of understanding from educators and students about the true purpose of pro-environmental behavior, whose goal is not to be a gimmick but more of offering a better quality of life, which is very closely related to existential intelligence.

Previous research from [11] mentions the impact of multiple intelligence strategies on

students' academic achievement in historical subjects and can improve communication skills, increase students' learning motivation, and increase their level of academic achievement.

One of the multiple intelligences used is existential intelligence, but this existential intelligence has not been associated with pro-environmental behavior. Research [12] on students at the University of Rochester explains that using existential intelligence in the form of threats from certain natural environmental conditions (pollution) can increase pro-environmental behavior when pro-environmental norms are the focus. Pollution can be considered a threat to life that can result in death. Death and life as part of the meaning in existential intelligence affect behavior. In this study, one of the indicators of existential intelligence used is the death threat, while other indicators have not been used. Another interesting study [13] examined ecological awareness's relationship between gender, social status, economy, and education. Respondents were 111 sophomore education students at BatStateU JPLPC – Malvar integrating care, knowledge, and action that determines the potential to increase students' ecological awareness. This research on environmental awareness has not used existential intelligence to predict pro-environmental behavior. [14] used 106 subjects of Iranian EFL students to investigate existential intelligence with indicators in the form of questions about human existence in search of meaning in life, reasons for death, and our role in the world. This study revealed that although all students used all nine intelligence abilities, students who used verbal intelligence felt better and more accomplished in dealing with life. [15] examined the effect of multiple intelligence-based learning on developing creative thinking for ninth graders in an Abu Dhabi private school. The concept of multiple intelligences opens the door to creativity in various aspects and reveals the intelligence capabilities inherent in students, which require encouragement and motivation to be improved and developed. Existential intelligence is the entrance to forming free relationships to increase independence in achieving certain goals. Creativity resulting from existential intelligence has not been used to achieve environmentally friendly behavior. Another study from [16] aims to identify the level of spiritual intelligence (Gardner refers to it as existential intelligence) among Al-Obeidi university students and its relationship with self-efficacy. Unfortunately, this study only looks at the effect of existential intelligence based on gender differences on

student self-efficacy, while its effect on pro-environmental behavior has not been mentioned. [17] examines intuition which is one indicator of existential intelligence. This intuition should be included in teaching through the educational curriculum. This intuition rests on an understanding of the experience of how to understand the basic laws of the universe, which is the basis for the formation of existential intelligence. This research has not led to pro-environmental behavior.

The novelty of this research is: several previous studies have not or even not used existential intelligence to see pro-environmental behavior. No research compares the differences in existential intelligence between eco-schools and non-eco schools. This difference can be used as a reference for schools that have not implemented an environmental basis to become an eco-school because it is confirmed from the research results that eco-schools have students with higher existential intelligence than non-eco schools. Increased existential intelligence is a good predictor for students' pro-environmental behavior.

Concerning the novelty of this research, to this date, the purpose of implementing the pro-environmental behavior is only to consider the costs and benefits. Several schools even consider it as a gimmick to oblige the regulation/system by becoming an *Adiwiyata* school as a promotion to increase the school level. [18] examined the implementation of ecological politics in educational institutions and found that it was necessary to look carefully that the applied ecological politics was not just a gimmick but must be able to foster students' environmental awareness and pro-environmental behavior. Further, it should maintain the environmental sustainability in which the students' pro-environmental behavior must be a better quality of life. It is in line with [19], who argued that pro-environmental behavior appeared to be a better quality of life - a deep awareness that protecting the environment was important not only for himself but also for the next generations. This better quality of life could be linked to economic, social, and ecological sustainability [20]. A previous study [21] showed no differences in the environmental knowledge of students in *Adiwiyata* schools and non- schools *Adiwiyata*, and neither their attitude of being environmentally friendly. However, they found differences in the eco-friendly behavior of students in *Adiwiyata* and non-*Adiwiyata* schools.

A deep environment awareness achievement requires existential intelligence. For students, this

existential intelligence must be nurtured early in their teens to have environmental leadership beneficial for them as the agents of change for environmental sustainability in the future. Research by [22] clearly stated that pro-environmental behavior could predict environmental leadership. The higher the level of pro-environmental behavior is, the higher the level of environmental leadership is.

This present study aims to analyze (1) differences in the existential intelligence of students in *Adiwiyata* and non-*Adiwiyata* schools; and (2) differences in the pro-environmental behavior between *Adiwiyata* schools and non-*Adiwiyata* schools. The following hypotheses can be proposed: (1) The existential intelligence of students in *Adiwiyata* schools is higher than in non-*Adiwiyata* schools; and (2) The pro-environmental behavior in *Adiwiyata* schools is higher than in non-*Adiwiyata* schools.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

A. Existential Intelligence of Students in *Adiwiyata* Schools and Non-*Adiwiyata* Schools

[23] conducted a study in Ukraine and found that students who succeeded in environmentally sustainable programs are the students who had high intrapersonal abilities. This ability led to existential intelligence, namely the ability to understand oneself. [24] added that it was the capacity to find oneself to the furthest reaches of the cosmos and the related capacity to place oneself concerning the existential human condition, such as the meaning of life. This is why [24] preferred existential intelligence over spiritual intelligence. In fact, [23] suggested some competencies that must be the basis for sustainable environmental education, especially in *Adiwiyata* schools where they applied multiple intelligences such as existential intelligence.

Further, [25] stated that a high sense of responsibility reflected existential intelligence was found in schools with environmental bases. In research on students in the UK and Australia, the students were responsible for waste management (reuse and recycling), both at school and at home. [26] added that someone with a high intrapersonal ability also had high emotional intelligence. This emotional intelligence affected the ability to think intuitively or deeply about the purpose of existence in the world and empathy for the creatures and environment around him.

Similarly, [20] emphasized the relationship between sustainability and existential

intelligence. Sustainability refers to a complex and diverse concept with deep spiritual roots, namely building a triple bottom line strategy to develop intangible spiritual abilities (i.e., spiritual intelligence and spiritual capital) that are valuable, rare, and holistic. The research results show that organizations gained a sustainable competitive advantage by developing and maintaining the spiritual ability, the intangible spiritual/existential abilities needed to create and implement a sustainability-based strategy. [27] analyzed the existential intelligence in teenagers who questioned previously accepted ideas, values, and beliefs and found a self-identity system to create harmony in life. Based on the above, the first hypothesis can be proposed:

H₀₁: The existential intelligence of students in *Adiwiyata* schools is higher than in non-*Adiwiyata* schools.

B. Pro-Environmental Behavior of Students in *Adiwiyata* Schools and Non-*Adiwiyata* Schools

[28] explained that in the evaluation of eco-schools in 13 countries, it was revealed that the students were more transformative so that they had the initiative to carry out the pro-environmental behavior towards a sustainable environment. The students sought to modify the behavior and directed others to participate in the environmentally friendly programs as taught in their schools. In addition, the teacher - the role model in the pro-environmental behavior - played a highly important role in this environmental awareness activity. [28] asserted that traditional schools were not ideal places to stimulate independent learning. It was different with eco-schools, where their social and environmental conditions strongly supported the students to be motivated independently and had an intrinsic motivation in the pro-environmental behavior.

In addition, [21] conducted a study with 153 students of four primary schools in the Greater Reykjavik Region in Iceland. Two of the schools were eco-schools, and the other two were not. The results showed that students' environmental awareness in the eco-schools was higher than in non-eco-schools, and so was their attitude towards the environment in recycling behavior. Further, the empirical data proved that the student's desire to study environmental issues was also higher in the eco-school. It was further investigated that the behavior of throwing garbage in its place and turning off water and electricity when not in use was more frequently carried out by the students in eco-schools. Likewise, the behavior of recycling newspapers,

paper, organic waste, used bottles, cardboard, plastic, metal, and glass materials was also mostly carried out by the eco-school students.

Studies [29] and [30], investigating 1,287 students from 59 schools (38 eco-schools and 21 regular schools) in Flanders, found that the students of eco-schools proved to be more knowledgeable about environmental topics and issues and about the values of environmental conservation, which made them more environmentally friendly. Based on the above, the second hypothesis can be proposed:

H_{a2} : The pro-environmental behavior in Adiwiyata schools is higher than in non-Adiwiyata schools.

III. METHODOLOGY

There were 1,539 respondents in total participating in this study. They were last year students in Adiwiyata and non-Adiwiyata high schools in Semarang and took place in April-June 2021. The data were collected using questionnaires in Google Form distributed online. Then, the data were analyzed statistically using the Mann-Whitney test with SPSS 21. The Mann-Whitney test aims to determine whether there is a difference in the average of two unpaired samples, with the number of samples used not having the same amount. It is part of non-parametric statistics so that the research data that is normally distributed and homogeneous is not

needed. It is an alternative to the independent sample t-test [31]. The analysis was conducted to describe the differences or similarities of existential intelligence and pro-environmental behavior of students in Adiwiyata schools and non-Adiwiyata schools. Further, the analysis also enables the researchers to identify trends in the total response. To see trends in both schools, the respondents were divided into two groups based on their schools - respondents from Adiwiyata schools and respondents from non-Adiwiyata schools.

A. Existential Intelligence

The existential intelligence is measured by an inventory tool called SISRI-17, consisting of three factors and 17 questionnaire items. These three factors include critical existential thinking (CET), personal meaning production (PMP), and conscious state expansion (CSE) [32]. The respondents were asked to answer the questionnaire items to Highly Agree (4), Agree (3), Disagree (2), or Highly Disagree (1).

B. Pro-Environmental Behavior

A pro-environmental behavior scale measures pro-environmental one. The respondents were asked to answer the questionnaire items to Always (4), Often (3), Sometimes (2), or Never (1).

Table 1.
Questionnaire items in existential intelligence and pro-environmental behavior [32]

No.	Item
Existential intelligence	
KE1	I have often questioned the real meaning of life.
KE2	I recognize my personality more than my physical condition.
KE3	I spend time wondering about the purposes or reasons for my existence.
KE4	I can reflect on who I am and even contemplate my worth in the universe.
KE5	My ability to find meaning and purpose in life helps me adapt to stressful situations.
KE6	I can live a practical everyday life while thinking about my worth in this universe.
KE7	I recognize the relationship of mutual need, mutual giving, and mutual acceptance between me and others.
KE8	I can define purposes and meanings in my life.
KE9	I can direct my thoughts, from everyday thinking (practical) to deep thinking (philosophical).
KE10	I often wonder about the meaning of events in my life.
KE11	I can take lessons from my failures.
KE12	I can see problems and choices more clearly when my mind is clear.
KE13	I have pondered several times about the relationship between humans and all living and non-living things in the universe.
KE14	I can make decisions based on my life goals.
KE15	I have deeply contemplated whether or not there is some greater power or force (e.g., God, higher energy, etc.).
KE16	I can find the meanings and purposes in my everyday experiences.
KE17	I have trained myself to understand my worth in the universe.
Pro-environmental behavior	
PEB1	I reduce the use of plastic straws.
PEB2	I bring a tumbler/drink to school.
PEB3	I throw garbage in its place.
PEB4	I turn off the electricity when I do not use it.
PEB5	There is no leftover food on my plate.
PEB6	I go to school by public transportation.

IV. RESULTS AND DISCUSSION

A. Descriptive Analysis of Existential Intelligence and Pro-Environmental Behavior

In order to see descriptively of respondents' preferences for existential intelligence and pro-environmental behavior both Adiwiyata schools and non-Adiwiyata schools, it is made in the form of a bar chart as follows:

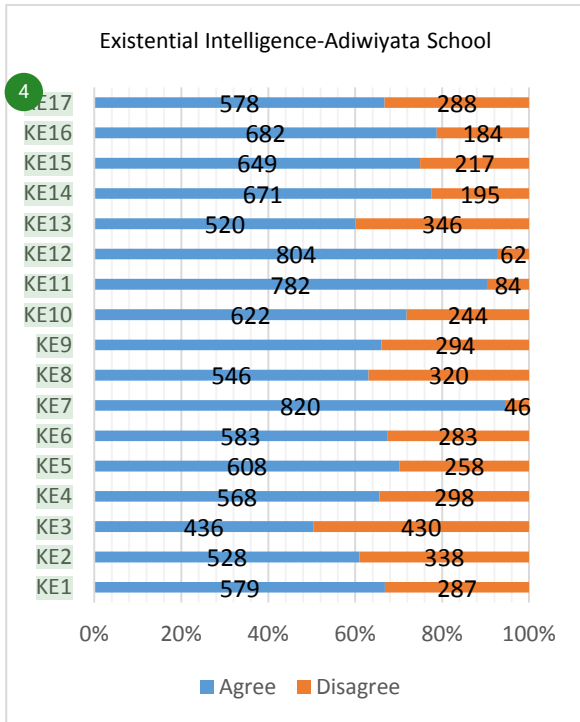


Figure 1. Existential intelligence of students from Adiwiyata schools (The researchers' processed data)

Figure 1 shows the response of respondents/students in Adiwiyata schools on existential intelligence. The "Agree" category is a combination of responses from Highly Agree (4) and Agree (3), indicating a higher existential intelligence, while the "Disagree" category is a combination of responses from Disagree (2) and Highly Disagree (1), indicating a weaker existential intelligence. Therefore, it can be concluded that most of the respondents agree with the questionnaire items that indicate that most of the students in Adiwiyata schools had existential intelligence. A questionnaire item agreed by most of the students (95%) is "I recognize the relationship of mutual need, mutual giving, and mutual acceptance between me and others."

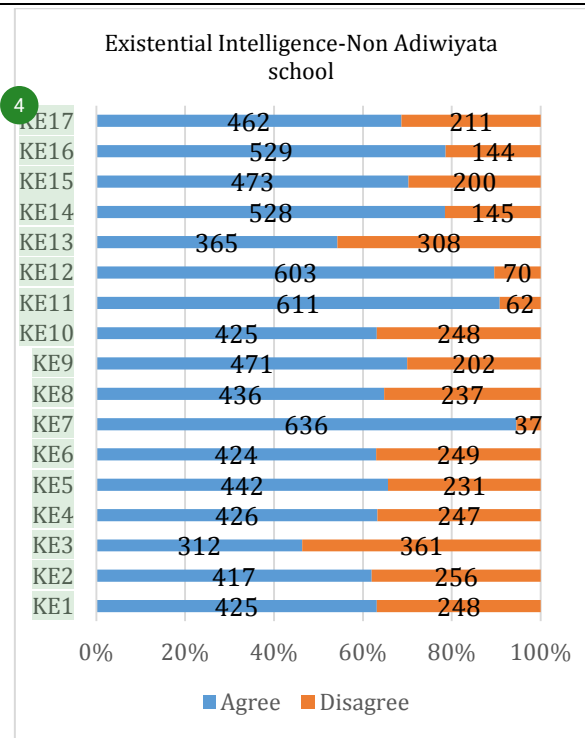


Figure 2. Existential intelligence of students from non-Adiwiyata schools (The researchers' processed data)

Figure 2 shows the response of respondents/students in non-Adiwiyata schools on existential intelligence. The "Agree" category is a combination of responses from Highly Agree (4) and Agree (3), indicating a higher existential intelligence, while the "Disagree" category is a combination of responses from Disagree (2) and Highly Disagree (1) indicating a weaker existential intelligence. Therefore, it can be seen that most of the students agree with the questionnaire items that also implies that most of the students in non-Adiwiyata schools had existential intelligence.

Based on Figure 1 and Figure 2, it can be seen that both schools have a similar trend where most of the students had existential intelligence. However, the ones in Adiwiyata schools have a higher percentage of students with an existential intelligence than those in non-Adiwiyata schools.

Although the results of the descriptive analysis showed that existential intelligence was almost similar in the Adiwiyata and non-Adiwiyata schools if these results were analyzed using the Mann-Whitney, there would be a significant difference. That makes the Mann-Whitney method an effective method for analyzing the results.

The following Figure 3 illustrates the trend of differences in existential intelligence of students in Adiwiyata schools and non-Adiwiyata schools ("Agree" category).

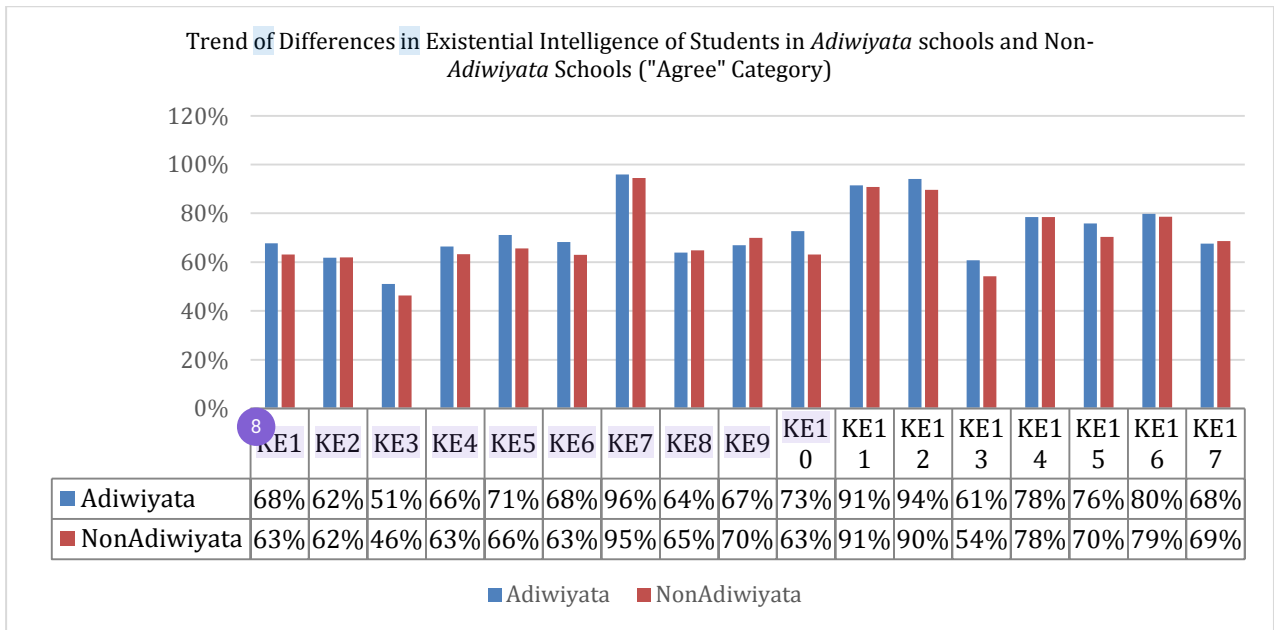


Figure 3. The trend of differences in existential intelligence of students in *Adiwiyata* schools and non-*Adiwiyata* schools (“Agree” category) (The researchers’ processed data)

Figure 3 describes the trend of differences in the existential intelligence of students in *Adiwiyata* schools and non-*Adiwiyata* schools (“Agree” category) measured based on their agreement to the questionnaire items on the existential intelligence. In general, it appears that the existential intelligence in *Adiwiyata* schools is higher than in non-*Adiwiyata* schools, except for KE8, KE9, and KE17. KE8 refers to the

statement "I can define purposes and meanings in my life," KE9 refers to the statement "I can direct my thoughts, from everyday thinking (practical) to deep thinking (philosophical)," and KE17 refers to the statement "I have trained myself to understand my worth in the universe." These three items have a similarity in *Adiwiyata* schools and non-*Adiwiyata* schools.

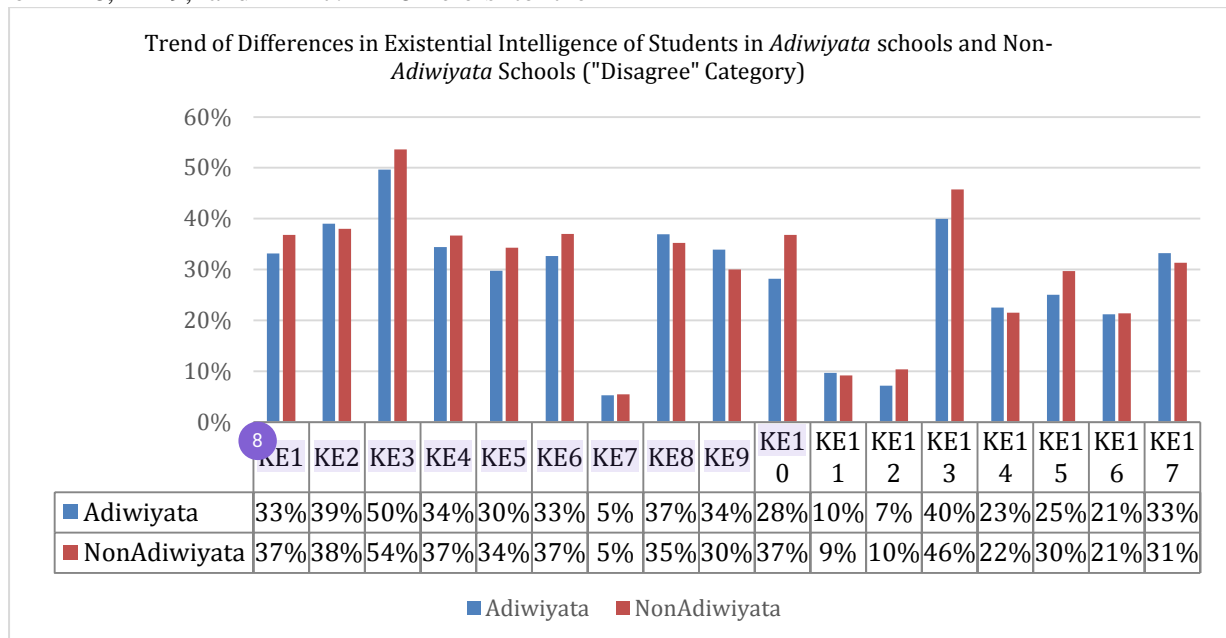


Figure 4. The trend of differences in existential intelligence of students in *Adiwiyata* schools and non-*Adiwiyata* Schools (“Disagree” category) (The researchers’ processed data)

Figure 4 describes the trend of differences in the existential intelligence of the students in *Adiwiyata* schools and non-*Adiwiyata* schools. "Disagree" category was measured based on their disagreement with the questionnaire items on

existential intelligence. Figure 4 is the opposite of Figure 3, explaining that, in general, the disagreement on the questionnaire items on existential intelligence of students in *Adiwiyata* schools is lower than the ones in non-*Adiwiyata*

schools. However, there is a higher trend, indicating that the existential intelligence of students in non-Adiwiyata schools is higher than in non-Adiwiyata schools.

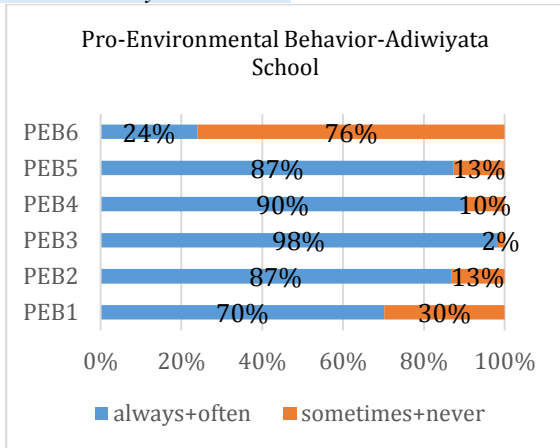


Figure 5. Pro-Environmental behavior of students in Adiwiyata schools (The researchers' processed data)

Figure 5 shows the response of respondents/students in Adiwiyata schools on pro-environmental behavior. The "Frequent" category is a combination of responses from Always (4) and Often (3) indicating a higher pro-environmental behavior, while the "Infrequent" category is a combination of responses from Sometimes (2) and Never (1), indicating a weaker pro-environmental behavior. Therefore, it can be concluded that most of the respondents in Adiwiyata schools frequently perform pro-environmental behavior. However, PEB6's statement "I go to school by public transportation" has a much lower percentage than others. During this Covid-19 pandemic, the students had social distancing and did not use public transportation. Most students frequently do a questionnaire item (98%): "I throw garbage in its place."

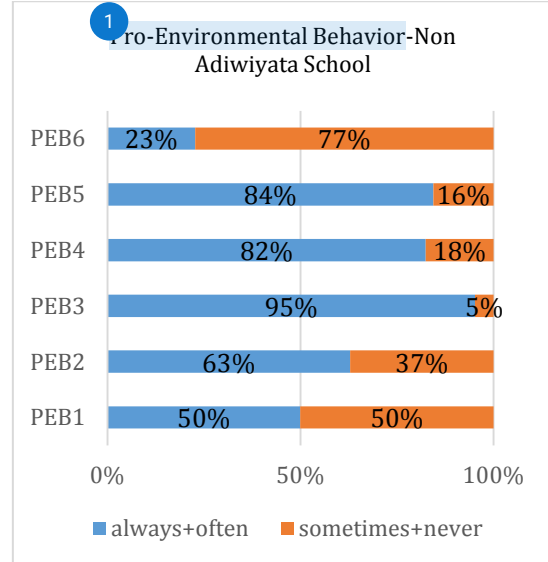


Figure 6. Pro-environmental behavior of students in non-Adiwiyata schools (The researchers' processed data)

Figure 6 shows the response of respondents/students in non-Adiwiyata schools on pro-environmental behavior. The "Frequent" category is a combination of responses from Always (4) and Often (3) indicating a higher pro-environmental behavior, while the "Infrequent" category is a combination of responses from Sometimes (2) and Never (1), indicating a weaker pro-environmental behavior. Therefore, it can be concluded that most of the respondents in non-Adiwiyata schools frequently perform pro-environmental behavior. Most students frequently do a questionnaire item (95%): "I throw garbage in its place."

The results of the descriptive analysis showed that pro-environmental behavior was almost similar in the Adiwiyata and non-Adiwiyata schools, but if these results were analyzed using the Mann-Whitney, there would be a significant difference. That makes the Mann-Withney method an effective method for analyzing the results.

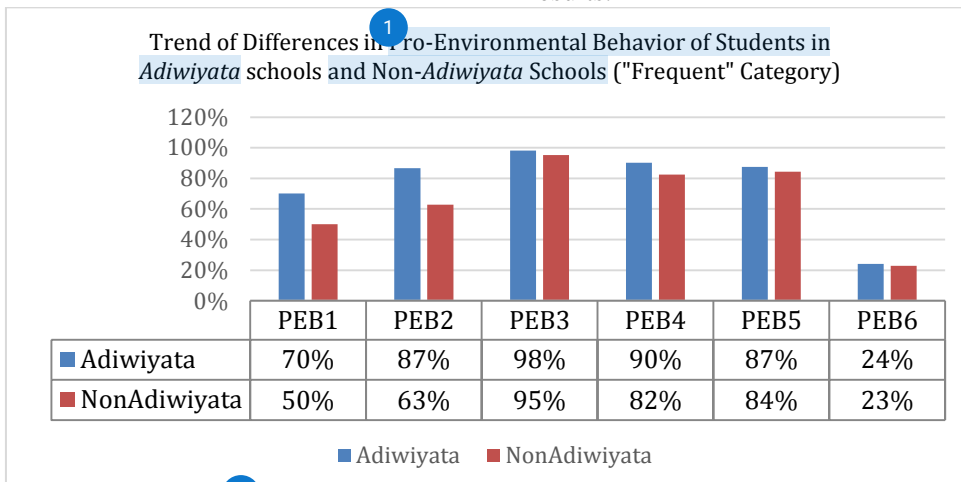


Figure 7. The trend of differences in pro-environmental behavior of students in Adiwiyata schools and non-Adiwiyata schools ("Frequent" category) (The researchers' processed data)

Figure 7 shows the trend of differences in pro-environmental behavior of students in *Adiwiyata* schools and non-*Adiwiyata* schools ("Frequent" category) measured based on their frequency to the questionnaire items on the pro-environmental

behavior. In general, it appears that the pro-environmental behavior of students in *Adiwiyata* schools is higher than in non-*Adiwiyata* schools.

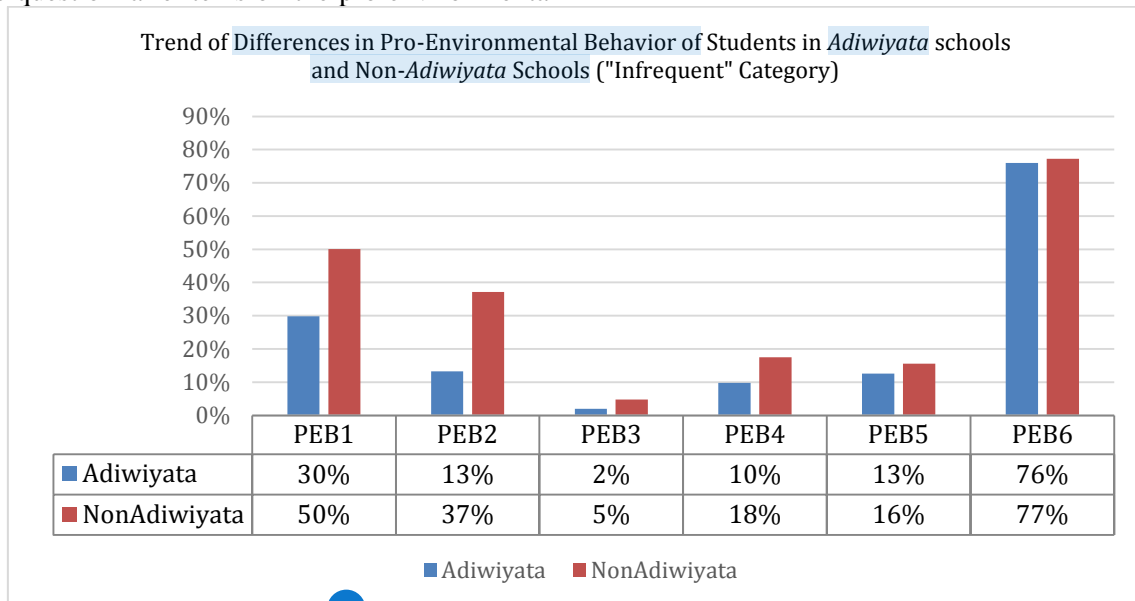


Figure 8. The trend of differences in pro-environmental behavior of students in *Adiwiyata* schools and non-*Adiwiyata* schools ("Infrequent" category) (The researchers' processed data)

Figure 8 shows the trend of differences in pro-environmental behavior of students in *Adiwiyata* schools and non-*Adiwiyata* schools ("Infrequent" category) measured based on their infrequency to the questionnaire items on the pro-environmental behavior. In general, it appears that the pro-environmental behavior of students in non-*Adiwiyata* schools is weaker / lower than in *Adiwiyata* schools.

B. Hypothesis Testing

The hypothesis testing was done with non-parametric statistics using the Mann-Whitney test. If Sig. < 0.05, then the hypothesis is supported empirically, and if Sig. > 0.05, then the hypothesis is not supported empirically.

Table 2.
Result of Hypothesis 1 testing (the existential intelligence of students in *Adiwiyata* and non-*Adiwiyata* schools)

Existential Intelligence (KE)	Mann-Whitney Test	Asymp. Sig.	H1
KE1	102.5	0.046	Supported
KE2	885.5	0.663	Rejected
KE3	954.0	0.048	Supported
KE4	233.0	0.696	Rejected
KE5	473.0	0.014	Supported
KE6	245.0	0.097	Rejected
KE7	576.0	0.431	Rejected
KE8	676.5	0.830	Rejected
KE9	858.5	0.052	Rejected

Continuation of Table 2			
KE10	201.5	0.000	Supported
KE11	863.5	0.477	Rejected
KE12	889.0	0.107	Rejected
KE13	949.5	0.017	Supported
KE14	169.5	0.678	Rejected
KE15	412.0	0.066	Rejected
KE16	276.0	0.986	Rejected
KE17	122.5	0.589	Rejected

Based on Table 2, KE1 has a Sig. value of 0.046 which is smaller than $p = 0.05$. Therefore, H_{a1} is supported empirically. It indicates that KE1 is different in *Adiwiyata* schools and non-*Adiwiyata* schools. Similarly, the Sig. value of KE3, KE5, KE10, and KE13 is 0.048; 0.014; 0.000; 0.017 respectively which is also smaller than $p = 0.05$. Thus, KE3, KE5, KE10, and KE13 are also different in *Adiwiyata* and non-*Adiwiyata* schools. Meanwhile, the Sig. value of KE2, KE4, KE6, KE7, KE8, KE9, KE11, KE12, KE14, KE15, KE16, and KE17 are 0.663; 0.696; 0.097; 0.431; 0.830; 0.052; 0.477; 0.107; 0.678; 0.066; 0.986; 0.589 respectively. They are higher than $p = 0.05$, indicating that they are similar in both schools. Further, to understand whether the differences are higher or lower between the two schools, a one-tailed analysis was done by dividing Asymp. Sig. by 2. If the value is less than 0.05, it means that H_a is supported empirically and indicates that the existential intelligence of students in *Adiwiyata* schools is

higher than in non-Adiwiyata schools [33]. Based on Table 2, it can be concluded that:

H_{a1} is empirically supported, indicating that the existential intelligence of students in Adiwiyata schools is higher than in non-Adiwiyata schools.

Table 3. Result of Hypothesis 2 Testing (The pro-environmental behavior in Adiwiyata and non-Adiwiyata schools). Source: researcher processed data

Pro-Environmental Behavior (PEB)	Mann-Whitney Test	Asymp. Sig.	H1
PEB1	221449.0	0.000	Supported
PEB2	213270.0	0.000	Supported
PEB3	284690.0	0.346	Rejected
PEB4	272709.5	0.016	Supported
PEB5	282546.0	0.261	Rejected
PEB6	287953.0	0.670	Rejected

Table 3 shows that the PEB1 value is 0.000, smaller than $p = 0.05$. Thus, H_{a2} is empirically supported, and PEB1 differs between Adiwiyata and non-Adiwiyata schools. Similarly, the value of PEB2 and PEB4 is 0.000 and 0.016, which are smaller than $p = 0.05$, confirming that PEB2 and PEB4 are also different in Adiwiyata schools and non-Adiwiyata schools. In contrast, PEB3, PEB5 and PEB6 are not different in both schools as their value is lower than $p = 0.005$ (0.346; 0.261 and 0.670 respectively). Furthermore, to understand whether the differences are higher or lower between the two schools, a one-tailed analysis was done by dividing Asymp. Sig. by two. If the value is less than 0.05, it means that H_a is supported empirically and indicates that the pro-environmental behavior of students in Adiwiyata schools is higher than in non-Adiwiyata schools [31]. Based on Table 3, it can be concluded that:

H_{a2} is empirically supported, indicating that the pro-environmental behavior of students in Adiwiyata schools is higher than in non-Adiwiyata schools.

Based on the Mann-Whitney statistical test, there is a significant difference in existential intelligence between Adiwiyata and non-Adiwiyata schools. Even though the descriptive analysis shows almost no difference between existential intelligence and pro-environmental behavior in the two schools, such a result confirms a significant difference in existential intelligence and pro-environmental behavior between the two schools based on statistical tests. In contrast, this issue has never been researched before.

V. DISCUSSION

This study aims to determine whether students' existential intelligence and pro-environmental behavior in Adiwiyata schools are higher than in non-Adiwiyata schools. The analysis results of existential intelligence show that KE1 has a value of 0.046, smaller than $p = 0.05$, so H_{a1} is supported empirically. It indicates that KE1 is different in Adiwiyata schools and non-Adiwiyata schools. In order to compare KE1 in the two schools, one-tailed analysis shows that KE1 has a value of 0.023, which is also smaller than $p = 0.05$. Thus, it can be concluded that the existential intelligence on the definition of the meaning of life of students in Adiwiyata schools is higher than in non-Adiwiyata schools.

Further, KE3 has a value of 0.048, smaller than $p = 0.05$, meaning that KE3 is different in the two schools. In order to compare KE3 in the two schools, one-tailed analysis shows that KE3 has a value of 0.024, which is also smaller than $p = 0.05$. Thus, it can be concluded that the existential intelligence on the purposes and reasons of life of students in Adiwiyata schools is higher than in non-Adiwiyata schools.

Next, KE5 has a value of 0.014, smaller than $p = 0.05$, meaning that KE5 is different in the two schools. In order to compare KE5 in the two schools, one-tailed analysis shows that KE5 has a value of 0.007, which is also smaller than $p = 0.05$. Thus, it can be concluded that the existential intelligence on the definition of purposes in life to adapt to stressful situations of students in Adiwiyata schools is higher than in non-Adiwiyata schools.

Then, KE10 has a value of 0.000, smaller than $p = 0.05$, meaning that KE10 is different in the two schools. In order to compare KE10 in the two schools, one-tailed analysis shows that KE10 has a value of 0.000 which is also smaller than $p = 0.05$. Thus, it can be concluded that the existential intelligence on the definition of meanings of events in the life of students in Adiwiyata schools is higher than in non-Adiwiyata schools.

In addition, KE13 has a value of 0.017, which is smaller than $p = 0.05$, meaning that KE13 is different in the two schools. In order to compare KE13 in the two schools, one-tailed analysis shows that KE13 has a value of 0.0085, which is also smaller than $p = 0.05$. Thus, it can be concluded that the existential intelligence on the definition of the relationship between humans and all living and non-living things in the universe of students in Adiwiyata schools is higher than in non-Adiwiyata schools.

Meanwhile, PEB1 has a value of 0.000 smaller than $p = 0.05$, meaning that PEB1 differs between the two schools. In order to compare PEB1 in the two schools, one-tailed analysis shows that PEB1 has a value of 0.000 which is also smaller than $p = 0.05$. Thus, it can be concluded that the pro-environmental behavior to reduce the use of plastic straws of students in *Adiwiyata* schools is higher than in non-*Adiwiyata* schools.

Meanwhile, PEB2 has a value of 0.000 smaller than $p = 0.05$, meaning that PEB2 differs between the two schools. In order to compare PEB2 in the two schools, one-tailed analysis shows that PEB2 has a value of 0.000 which is also smaller than $p = 0.05$. Thus, it can be concluded that the pro-environmental behavior to bring a tumbler/drink in *Adiwiyata* schools is higher than in non-*Adiwiyata* schools.

Furthermore, PEB4 has a value of 0.016, smaller than $p = 0.05$, meaning that PEB4 differs between the two schools. In order to compare PEB4 in the two schools, one-tailed analysis shows that PEB4 has a value of 0.008, which is also smaller than $p = 0.05$. Thus, it can be concluded that the pro-environmental behavior to turn off the electricity when not in the use of students in *Adiwiyata* schools is higher than in non-*Adiwiyata* schools.

On the other hand, PEB3, PEB5, and PEB6 have a value of 0.346, 0.261, and 0.670, respectively, greater than $p = 0.05$, meaning that they are similar in both schools. The students in both schools threw garbage in its place (PEB3), left no leftover foods on their plate (PEB5), and went to school by public transportation (PEB6). The above is in line with a study by [34] which found that the students in non-*Adiwiyata* schools, although at a moderate level, also performed pro-environmental behavior.

The above description shows that the *Adiwiyata* schools were indeed proven to increase their students' existential intelligence and pro-environmental behavior. Therefore, it was important to establish more *Adiwiyata* schools and encourage the non-*Adiwiyata* schools to participate and transform themselves into *Adiwiyata* schools. The *Adiwiyata* schools, which could develop existential intelligence, would see a different perspective on the environment.

This study also proves the existence of a transformational model, which was a holistic approach involving the head, hand, and heart in seeing a sustainable environmental ecology, with the essential elements being deep involvement, relationship and reflection, perception, value, and proactive involvement in the environment. In the

end, the pro-environmental behavior was formed to offer a better quality of life, namely a deep awareness outside of oneself that protecting the environment was important not only for him/herself but also for the future generation [19].

Furthermore, the existential intelligence which could be developed in *Adiwiyata* schools could improve the characters of students to understand the environmental behavior in a broader perspective, so that they were not confined to the local area but were able to understand that in the future, they were the environmental leaders and agents of change for the people around them. This study also supported [35] that under the social cognitive theory, the students - as the agents of change - were the center for their surrounding community to form pro-environmental behavior. The character formed was self-efficacy - an individual's belief in regulating and controlling certain conditions in certain situations.

VI. CONCLUSION

The results show that KE1 has a Sig. value of 0.046 which is smaller than $p = 0.05$. Therefore, H_{a1} is supported empirically. It indicates that KE1 is different in *Adiwiyata* schools and non-*Adiwiyata* schools. The Sig. value of KE3, KE5, KE10, and KE13 is 0.048; 0.014; 0.000; 0.017 respectively which is also smaller than $p = 0.05$. Thus, KE3, KE5, KE10, and KE13 are also different in *Adiwiyata* and non-*Adiwiyata* schools. Previous research conducted by Fernandes in 2011 stated that existential intelligence is the ability and willingness to overcome existential problems in nature. It is stated that existential intelligence is a relatively new field of interest that is still rarely interested in, so there are opportunities for further research. The research was conducted in preliminary research to measure existential intelligence from anxiety indicators. The correlation between existential intelligence and depression ($r = .21$, $p = .024$), was significant at the level of $p < .05$. While the correlation between existential intelligence and anxiety ($r = 0.09$) was not significant at the level of $p < 0.05$. It can be concluded that existential intelligence is needed to see how far a person's ability and willingness to interact with the environment. The higher the existential intelligence is, the higher the ability and willingness to interact with nature in the form of pro-environmental behavior. In the research results, existential intelligence indicators that distinguish students from *Adiwiyata* and

non-*Adiwiyata* schools are the meaning of life (KE1), purposes and reasons of life (KE3), purposes in life to adapt to stressful situations (KE5), meanings of events in life (KE10) and the relationship between humans and all living and non-living things in the universe (KE13). This indicator needs to be further developed and fostered to achieve a sustainable environment.

It is important to analyze existential intelligence and pro-environmental behavior from students' perspectives in *Adiwiyata* and non-*Adiwiyata* schools. The results show that the existential intelligence of students in *Adiwiyata* schools is higher than in non-*Adiwiyata* schools. In this case, existential intelligence refers to the definition of the meaning of life (KE1), purposes and reasons of life (KE3), purposes in life to adapt to stressful situations (KE5), meanings of events in life (KE10), and the relationship between humans and all living and non-living things in the universe (KE13). Similarly, the results show that the pro-environmental behavior of students in *Adiwiyata* schools is higher than in non-*Adiwiyata* schools. In this case, the pro-environmental behavior refers to reducing the use of plastic straws (PEB1), bringing tumbler/drink to school (PEB2), and turning off the electricity when not in use (PEB4).

The results of this study indicate a need for more *Adiwiyata* schools so that more students with high existential intelligence can help increase the pro-environmental behavior of students in all high schools in Semarang.

VII. IMPLICATION

The *Adiwiyata* schools and their programs developed by the government have been recognized and have a good evaluation that proves that they can increase students' existential intelligence and pro-environmental behavior. Increasing existential intelligence can increase the students' self-efficacy so that they have the confidence to be more active in participating in various environmentally friendly programs at schools. Moreover, not only participating cognitively but the students can also be directly involved in the field to make more actions for the environment and empathize with all creatures affected by the environmental damages.

Due to the significant differences between the two schools, there are several points related to the pro-environmental behavior from *Adiwiyata* schools suggested being followed by non-*Adiwiyata* schools since these are recognized as valuable input for the management of non-*Adiwiyata* schools. It is expected that if they can adapt to the pro-environmental behavior of

Adiwiyata schools, it will be easier for them to adapt if they decide to transform to *Adiwiyata* schools in the future. For example, encouraging their students to reduce plastic straws, bring their tumbler/drink to school, and turn off the electricity when not in use. Non-*Adiwiyata* schools have to be more active in encouraging their students in terms of these examples of pro-environmental behavior as their students have not been able to do so.

To apply the research results in practice, the authors suggest that school management incorporates existential intelligence indicators, especially KE1 (refers to the definition of the meaning of life), KE3 (purposes and reasons of life), KE5 (purposes in life to adapt to stressful situations), KE10 (meanings of events in life) and KE13 (the relationship between humans and all living and non-living things in the universe) into the lesson curriculum and informal activities so that the higher the existential intelligence, the higher the pro-environmental behavior is expected. This curriculum should also be re-evaluated gradually. It also educates students on pro-environmental behavior through informal activities, especially reducing the use of plastic straws (PEB1), bringing tumbler/drink to school (PEB2), and turning off the electricity when not in use (PEB4).

Lastly, in terms of existential intelligence, there is a need for teachers in non-*Adiwiyata* schools to encourage their students to be confident to have the power to change themselves and their surroundings for the environment. It is expected that gradually, the students can think more intuitively and critically on problems they face and find the root causes to solve the problems. It is also expected that the students can reflect and think about the definition of the meaning of life, purposes and reasons of life, purposes in life to adapt to stressful situations, meanings of events in life, and the relationship between humans and all living and non-living things in the universe. By learning gradually, it is expected that the students in non-*Adiwiyata* schools can improve their existential intelligence and simultaneously improve their pro-environmental behavior.

VIII. LIMITATIONS OF THE STUDY

The strength of the research is that existential intelligence greatly influences pro-environmental behavior, so the higher existential intelligence, the higher pro-environmental behavior. Meanwhile, the limitation is that existential intelligence is a new field of study that is rarely used to predict a person's behavior, especially

pro-environmental behavior, so previous research studies are still very limited. However, on the contrary, this limitation opens up opportunities for other researchers.

Researchers could find out how successful the program implemented in *Adiwiyata* schools was, how the program is implemented, the level of participation of students and educators in the program, and the extent of awareness and knowledge of students about environmental care. The interviews with the school management showed that the main obstacle in running *Adiwiyata* schools was the high cost that had to be funded by themselves. Moreover, the success of the *Adiwiyata* school program was highly dependent on the level of involvement of students and educators. It is in line with [18], who stated that the toughest challenge of the *Adiwiyata* school is changing the paradigm of pro-environmental behavior. The existing paradigm is that the *Adiwiyata* school title is only a gimmick. It has to be changed into a new paradigm of pro-environmental behavior: offering a better quality of life. Likewise, the challenges for non-*Adiwiyata* schools require a lot of money and effort to involve all students and educators to transform into *Adiwiyata* schools.

For future research, the author recommends developing further research on existential intelligence, both concerning behavior and other things, with various respondents with differences in gender, education level, socioeconomic status, and others.

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