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The Effect of Portfolio Engineering and School Environment on Primary School Children's Environmental Awareness

R. Sihadi Darmo Wihardjo, Nadiroh, & Agus Sujaarwanta
Jakarta State University

Abstract
This research was conducted with reference to the urgent need of character education for early childhood especially the character of environmental concern. The purpose of this study is to examine the effect of portfolio engineering and school environment on environmental concern of primary school students. The research was conducted at elementary school in Bekasi district involving of three elementary schools. The study used whole classes method which the group were determined randomly. The research was experimental and the result was analyzed by using parametric statistic which was two way variance analysis. The results obtained from this study, among others: 1. There is the effect of portfolio engineering on student's environmental concern. Elementary school students whom provided with portfolio engineering with teacher instruction have higher environmental concern than the primary school students provided portfolio engineering without teacher instruction; 2. There is the influence of school environment on student's environmental concern. Primary school students who attend school in industrial environment, tend to have higher environmental concern than elementary school students who attend school in a non-industrial environment; 3. There is the effect of interaction between the portfolio engineering and school environment on the student's environmental concern; 4. The elementary school students who attend the school in industrial environments provided engineering portfolio dissertation instructors, have a higher level of environmental concern than those who are not given the instruction; 5. The elementary school students who attend the school in non-industrial environment provided portfolio engineering dissertation teacher instruction have a lower level of environmental concern than those who are not given the instruction.

Keywords: environmental concern, school environment, portfolio engineering.
ALTERNATIVE APPROACHES AND PRACTICES OF EARLY CHILDHOOD EDUCATION IN THE 21st CENTURY

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Effect of portfolio engineering and school environment to the character of environmental concern (experiment in primary school student in Bekasi)

R. S. D. Wihardjo  
*Universitas Negeri Jakarta*

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A. Sujarwanta  
*Universitas Negeri Jakarta*

ABSTRACT: This research was conducted with reference to the urgent need of character education for early childhood especially the character of environmental concern. The purpose of this study is to examine the effect of portfolio engineering and school environment on environmental concern of primary school students. The research was conducted at elementary school in Bekasi district involving of three elementary schools. The study used whole classes method which the group were determined randomly. The research was experimental and the result was analyzed by using parametric statistic which was two way variance analysis. The results obtained from this study, among others: 1. There is the effect of portfolio engineering on student's environmental concern. Elementary school students whom provided with portfolio engineering with teacher instruction have higher environmental concern than the primary school students provided portfolio engineering without teacher instruction; 2. There is the influence of school environment on student’s environmental concern. Primary school students who attend school in industrial environment, tend to have higher environmental concern than elementary school students who attend school in a non-industrial environment; 3. There is the effect of interaction between the portfolio engineering and school environment on the student’s environmental concern; 4. The elementary school students who attend the school in industrial environments provided engineering portfolio dissertation instructors, have a higher level of environmental concern than those who are not given the instruction; 5. The elementary school students who attend the school in non-industrial environment provided portfolio engineering dissertation teacher instruction have a lower level of environmental concern than those who are not given the instruction.

1 INTRODUCTION

Implementation of character education in the school-based education unit has become the government’s attention at this time, but the situation in the field, not
all activities can be carried out intensively. This is because this is a newly
revolved policy, in addition, the device that serves as a guide is not yet fully
available in each school. Education should start from the Early Childhood
Education to be a strategic means to produce graduates who are strongly
characterized. Under these conditions, the creative and practical efforts to
organize the activities of character education support become urgent to do. In this
context, character education is not only a part of face-to-face meetings in
classroom learning, but can also be done in the behavioral aspects outside of
lessons; the scope of the school environment. This is based on the theory that
character education as a holistic process. The family, school, and community
environment are complementary factors; so that the potential of the human
individual on the aspect of his behavior is imbued by the value of the character
can be implemented in everyday life.

This is an important factor of research, taking into account portfolio
engineering and school environmental factors in the growth of student’s
environmental concern. The growth of environmental concern character of
learners in elementary school can be triggered through portfolio engineering. The
portfolio appraisal approach has a different nature than other assessment
approaches. The approach used in portfolio assessment is an assessment that aims
to measure how far students’ ability to construct and reflect on a job / task or
work, by collecting materials relevant to the goals and wants constructed by the
student so that the results can be assessed and commented on by the teacher
within a certain period. Organizing the portfolio also becomes part of the learner’s
task. The trick is to record all the results of activities in the diary, whether or not
having a physical document, before it is inserted into the portfolio bundle.

In the "character education master design" compiled by the Ministry of
National Education (2010), Main Design Character Development, character
education can be carried out integratively in the four important pillars of character
education in schools: learning activities in the classroom, the development of
cultural educational units, co-curricular activities, and extracurricular activities.
The context of this research, takes the focus to the pillars of the cultural
development of the educational unit. According to the Indonesian Guidelines for
the Implementation of Character Education, The Center for Curriculum and
Books (2011), Guidelines for the Implementation of Character Education (Based
on Experience in the Pilot Education Unit), in Order to Strengthen the
Implementation of Character Education, there are 18 values that come from
religion, Pancasila, culture, and national education objectives. One of them is
character of environmental concern. In the implementation, the number and type
of characters selected may vary from region to region; as well as one school with
another. It depends on the interests and conditions of each unit of education.
Moral power is nothing but a psychic tendency of a person in making decisions
that are highly dependent on the person, which ensures morality is relative.
Although the soul of subjectivity in a person necessitates the birth of plurality in
moral, but that does not mean there is no fact that can be used as a measure of a
moral action.
A person's concern for the environment is influenced by various factors, including internal factors such as attitudes, empathy, perceptions, activities, commitments, and responsibilities. In addition, external factors also can not be ignored, such as: teacher's learning strategies, school environment, parent participation, and school programs. Environmental concerns is a person's awareness of environmental issues. Concerns that support one's activities to protect the environment, will make a person's sense of sensitivity to the surrounding environment. The integration of positive concern for the environment can be done by a teacher in giving the lesson material in the school. To achieve that goal, the right learning strategy is needed beside supported by adequate learning tools. A teacher's learning strategy in delivering material may vary depending on many factors. Similarly, what happens in schools, outside the learning process even teachers can integrate the growth of environmental concerns by using a variety of ways, including portfolio engineering. This method allows to be implemented without interrupting the time of the lesson. The teacher in this case, teaches the subject matter according to the applicable curriculum.

2 LITERATURE REVIEW

2.1 Environmental concern

Environmental awareness is crucial environmental issues that nowadays are rapidly increase by the exploitation of natural resources; and the use of modern technology that not only has a positive impact on life. In addition, the environmental damage caused by the lack of care of some communities. There is still hope to improve it by raising the environmental awareness of the communities. The term of awareness of the environment is often called the environmental concern. Therefore, environmental concern is closely related to the actions or behavior of a person or group of people based on considerations or insight into the environment. Everyone has a concern for the environment. However, the level of awareness is varied, some people are highly concerned and some are rather low, UNESCO-UNEP (1976), United Nations Educational, Scientific, and Cultural Organization, United Nations Environment Programme. The Belgrade Charter Connect. According to Nenggala (2006), Sports Physical Education and Health, the indicators that indicate a person who cares about the environment are: 1) always maintaining the sustainability of the surrounding environment; 2) not taking, cutting or removing the existing vegetation along the way; 3) not scribbling or writing on trees, stones, roads or walls; 4) always throw garbage at the right place; 5) do not burn garbage around residential settlements; 6) actively carry out work activities to clean the environment; 7) stockpile of unused items; and 8) clean up the rubbish that clogs waterways.

According to Miller (1975) Living in the Environment Concepts, Problems, and Alternatives, environmental concern is a human way to preserve nature so as not to be disturbed by other irresponsible people. Concept of environmental concerns, first emerged from the symptoms of changes in public views on the environment. This change is characterized by concerns about environmental issues, which
began to become social issues in the late 1960s and early 1970s, especially in developed countries. According to Anderson Introduction to Communication Theory and Practice, caring is the mental process of a person's consciousness due to a dominant and prominent impulse. In this case, the term "concern" put a value on the environment, not on the people. So the main point of concern is the domain, in which all individuals and cultures complement are holding the value. Gilmour & Duck (1983), The Development of Social Psychology. Concern is essentially a response to stimuli, where it affects a person's behavior.

Behavior is influenced by a variety of backgrounds, both inborn backgrounds and environmental background as well as the educational background. Crider et al., (1983) Psychology. Humans are influenced by various social stimuli, so they have certain behaviors. According to Bennet (1997), Evaluate of Environmental Educational Program, concern for the environment is based on their knowledge, feelings and tendencies of a person in act or behave in various circumstances. Swan (1973) Psychological Response to The Environment in C. R Goldman, explains that concern comes as a result of something oriented in the future.

Understanding environmental awareness is determined by the amount of experience and emotional connection that comes from the learning process, both formal, non formal and informal. In relation to the cultivation of environmental awareness, students must be holistically placed in school, family, and community. It can simply be practiced within the scope of school, family or household to create environmental concerns. For example, on the cleanliness of the environment in the school, inside the home, and the environment around the house, concern for the environment will be a public opinion if it has become a value and trust for all other members of the community. People are starting to doubt on beliefs and knowledge assume that the natural environment as an infinite resource. It is not only marked by a fundamental change in the conditions of how the natural environment it is working, but also in the fact how the natural environment has also changed thereby affecting the lives of both the social, economic, and political conditions.

In more detail, can be explained that the form of environmental concern, among others: (1) persuasion (moral persuasion), that is by persuading people to preserve nature by means of counseling; (2) sue for damages by prosecuting a person if a person, group, or company destroys the environment; (3) the prohibition is by making the prohibition to damage the environment; (4) direct regulation, namely by way of legislation; (5) payment and incentives, that is by giving encouragement to provide funds to conserve nature, and (6) "pollution rights" and "pollution changes" by the way of sanctions/penalties to companies that pollute the environment.

In the family or household needs to create awareness of the environment, both in the home and the environment around the house. raising the environmental concern will be a public opinion if it has become a value and trust for all other members of society, so that concern for environmental issues leads to an organized, organized realization into a social movement. One of the relevant issues in this regard, is the issue of the our living environment. Dunlap & Lier
The New Environment Paradigm: A Proposed Measuring Instrument and Preliminary, argue that individuals who are concerned about the environment will have a fundamental view of the world, in a different way than those who do not care. The paradigm will be reflected clearly in the attitude that is in a person, especially in behaving towards the surrounding environment. Indifference to the environment will cause environmental crises. In Milbarth cited Bechel (1993) *Environmental and Behavior*, proposed a new paradigm related to environmental issues.

The new paradigm as a "New Social Movements" whose aim is not to redistribute the natural resources available in the community, but rather how to realign more basic society that cares for the environment. There is also environmental concern in question is related to values, ethics, attitudes, and behavior. Theoretically, environmental awareness is based on three values orientation: selfishness, socialistic, and biospheric life. Judging from its proportionality, these three values orientations underlie unbalanced environmental behavior concerns. But the whole thing, actually can relate to each other. If the attitude of environmental concern is based on the orientation of the value of personal interest, then the individual will prefer to protect the environment if the expectation to achieve profit greater than the cost which incurred. Another case if the environmental awareness is based on the orientation of social altruistic value (humanistic) then no matter the amount of costs incurred in order to protect and save people and the environment. In this case someone with a strong social orientation will make the environment as a valuable potential for human life, because children will get protection from various air pollution that is detrimental to health.

Environmental concerns should in fact be closely linked to concerns about other factors, such as concern for minority rights or against the poor. Furthermore, it is said that if the concern is based on biosphere values, then one will express action on the basis of moral principles that care for the species and the natural environment. With the theoretical study above, it can be synthesized that environmental concern is the psychological condition of a person that can be a feeling, concern, belief, and environmental value referenced about environmental carrying capacity, harmony, and balance.

3 PORTFOLIO

The definition of portfolio described by Budimansyah (2002) *Learning Model and Portfolio Assessment*, as a collection, should include the participation of learners in content selection, content criteria, selection criteria, assessment criteria, and evidence of self-reflection. In the "Portfolio-based learning" terms, when juxtaposed with the concept of assessment, then we can call it as the term "portfolio-based assessment". The portfolio assessment approach is different from other assessment approaches. Approach to portfolio assessment is an assessment that aims to measure the extent of the ability of learners to construct and reflect on a job / task or work with collecting or collecting the materials that
are relevant to the goals and desires that are constructed by the learner, so that the construction can be rated and commented by the teacher within a certain period.

Surapranata & Hatta (2006), *Portfolio Assessment of 2004 Curriculum Implementation*, stated that there are two methods to organize the "evidence portfolio" of learners. First, teachers and learners place all the evidence of learners to a specific place eg in a corner of space, or a particular folder in the closet. Second, the teacher selects all the evidence of the learners to be included in the documentation of portfolio. In addition, organizing a portfolio is also a part of the learner's task. The most appropriate way is to record all the results of activities in a diary either having a physical document or not before it is inserted into the portfolio bundle.

Educational-based environment education learning model framework refers to the Portfolio design, so that its thinking is based on Educational-Portfolio learning design, which includes accountability for the preparation of portfolio documents that have been compiled by students which are divided into Parts and Section, and Assessment by a jury guided by a moderator. Sahabuddin (2015), *Living Environmental Education Model Based on Educational-Portfolio a Review*.

### 4 SCHOOL ENVIRONMENT

According to Sutrjjat (1990), *Geography High School Class I*, the geographical environment is divided into two, namely: biological and non-biological, both can affect human life both psychologically and physically. Physically, people living in coastal areas can be distinguished from the people who live as farmers in the fields. This distinction can be seen both physically and in various ways of life. The roof shape of Saudi Arabia's tropical society is different from that of the Indonesian tropics simply because of the climate difference. Saudi Arabia's tropical desert is very dry, hot during the day and extreme cold at night. Rain rarely goes down causing the houses there to be flat-roofed with limited ventilation holes. On the other hand, the roof of the Indonesian house is tilted due to the high rainfall rate.

According to Yusuf & Nurhisan (2006), *Platform for Guidance and Counseling*, one of the factors influencing the formation of one's character is influenced by the environment (family environment, cultural environment, and school environment). Other factors may be genetic influences. One's personal factors can be inner quality and skills related to human relationships. Schools are formal educational institutions that systematically implement, among others, guidance, teaching, and training programs in order to help learners to be able to develop their potential, whether involving the moral aspect, spiritual, intellectual, emotional, and social. DeVito (2001), *The Interpersonal Communication Book*, the school environment is one of the formal educational institutions, where the teaching-learning process takes place.

The school environment can also be defined as an environment in which learners are taught to obey the values of school rules and values of learning activities of various fields of study that can be pervasive into the student's conscience. With the understanding of the school environment above, this
research is closer to the geographical aspects. The existence of different physical environment character causes different human behavior. This is the basis of the concept which used to establish the school environment based on the physical environment, namely industrial environment and non-industrial environment.

5 RELEVANT RESEARCH RESULTS

The results of research conducted by Indriatno (2013), *Welcoming 2013 Curriculum*, with ex post facto method concluded that: (1) there is a positive and significant relationship between school environment with the character of the students of Sleman State Vocational High School ($p < 0.05$); (2) there is a positive and significant relationship between the family environment with the character of the students of Sleman State Vocational High School ($p < 0.05$); (3) there is a positive and significant correlation between community environment with the character of students of Sleman State Vocational High School ($p < 0.05$); (4) there is a positive and significant relationship between school environment, family, and society with character of students of Sleman State Vocational High School Regency ($p < 0.05$). The three independent variables can explain 14.2% of the dependent variable.

Zaminah, et al, *Character Education Model for Vocational High Schools*, in "Character Education Model for Vocational High School". The research tries to develop character education model that is suitable with Vocational High School education system, so that the negative stigma attached to vocational school students can be overcome. With the character education, Vocational High School should be able to deliver the students of Vocational High School become a superior person and have a good working culture. In this case, Vocational High School graduates who have noble values such as: discipline of students in schools, classroom discipline, values of decency, value - the value of nationality, the values of honesty, the values of patience, and also the values of independence. Both of the above studies illustrate that the school environment in fact influences the character of the students directly. The school environment is examined more for school facilities and infrastructure. Physically, this is different from the study in this study that reveals the school environment from the geographical aspect, which is divided into two groups: the school environment in industrial areas and school environment in non-industrial areas.

The experimental group demonstrated higher achievement and better attitude toward the science lesson than the control group demonstrated. The students in experimental group commented that portfolios made their learning meaningful and helped them to learn better. Çakan, Mihădîz and Taşkin (2010), *How Portfolio Use Affects Students’ Learning and Their Attitudes toward 6th Grade Science Lesson*.

The research results other also show positive responses from students because project-based learning gives project assignments that provided them with opportunities to develop their confidence and hone their creativity. Students’ activity in teaching and learning increased, as observed from their active involvement and independence in completing the projects during the teaching and
learning process. Teachers responded positively and viewed that social studies teaching and learning process implementing project-based model had more advantages, namely: it could improve teachers’ knowledge and understanding of the syntax of innovative learning models and improve their abilities and skills in managing, organizing, and conducting instruction in the classroom. The obstacles encountered in the implementation of this project-based learning model were time allocation and the long preparation for teachers in order for the model to work well. Oktavian, Catur & Maryani (2015), Application of Project-Based Learning Models to Develop the Care of Students Against the Environment.

6 MATERIALS AND METHODS

This research is conducted with operational objectives, as follows: 1) To test the effect of portfolio engineering on students' environmental awareness; 2) To test the influence of school environment on environmental awareness of the students; 3) To test the effect of interaction between portfolio engineering and school environment on the students' environmental awareness; 4) To test the effect of portfolio engineering on the students' environmental awareness, based on industrial school environment; 5) To test the effect of portfolio engineering on environmental awareness of the students, based on non-industrial school environment.

The research was conducted from October until December 2017. The place of study was conducted in primary school state in Bekasi district, among others: Gandamekar 01 state primary school of Rawajulang Village, Gandamekar 02 state primary school of Rawajulang Village, and Karangsattra 04 state primary school. This research uses experimental method with 2 x 2 factorial design. According to Putrun (1990), Hypothesis Testing in Social Research, the use of experimental methods is intended to examine the presence of the influence of independent variables on the dependent variable.

The research variables studied consist of: (1) the main independent variable is portfolio engineering (A) which is categorized into two, namely: portfolio engineering with teacher instruction (A1) and portfolio engineering without teacher instruction (A2). The second independent variable as the moderator variable (simple effect) is the school environment (B) which is categorized into two: the school environment in the industrial area (B1) and the school environment in the non-industrial area (B2).

The target population in this study were all state primary school students who attend school in Bekasi Regency. While the affordable population were state primary school students that consisting of 3 (three) schools, namely: Gandamekar 01 state primary school of Rawajulang Village, Gandamekar 02 state primary school of Rawajulang Village, and Karangsattra 04 state primary school.

The sampling technique was conducted by random sampling. Random retrieval is done at the time of class assignment for the experiment. Based on the affordable population, then to obtain the respondents according to the categories of the independent variables X1 and X2 is done by creating two categories by group, namely: groups A1B1 and A2B1 each containing 28 respondents. While the
group A₂B₁, 29 respondents, and group A₁B₂ consists of 30 respondents. In relation to experimental research, the research activities can be described as follows:

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<tr>
<th>Variable X₂</th>
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<th>Portfolio Engineering (A)</th>
<th>Without teacher instruction (A₂)</th>
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<tr>
<td></td>
<td>Industrial Environment (B₁)</td>
<td>A₁B₁</td>
<td>A₂B₁</td>
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<tr>
<td>School environment (B)</td>
<td>Non-Industrial Environment (B₂)</td>
<td>A₁B₂</td>
<td>A₂B₂</td>
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Figure 1. Experimental Design of Factorial Research 2 x 2

Implementation of the series of experimental activities can be described as follows:

Table 1. Design of Portfolio Engineering Stages

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<th>No.</th>
<th>Details</th>
<th>Subject /Executors</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Portfolio engineering training.</td>
<td>Researchers</td>
<td>Classroom</td>
</tr>
<tr>
<td></td>
<td>teacher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Filling in the assessment sheet.</td>
<td>Researchers</td>
<td>Classroom</td>
</tr>
<tr>
<td></td>
<td>teacher</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>portfolio environmental concerns.</td>
<td></td>
<td>Learners</td>
</tr>
<tr>
<td>3.</td>
<td>Monitoring the activities of the learners.</td>
<td>Classroom teacher</td>
<td>Learners</td>
</tr>
</tbody>
</table>

While the description of the implementation of portfolio engineering activities in growing environmental concern, can be shown in the following table:

Table 2. Portfolio Engineering for Teachers and Learners

<table>
<thead>
<tr>
<th>No</th>
<th>Portfolio with Teacher’s Instruction</th>
<th>Portfolio without Teacher’s Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The teacher gives the classroom</td>
<td>The teacher gives the classroom</td>
</tr>
<tr>
<td></td>
<td>instructions on the use of space and</td>
<td>instructions on the use of space and</td>
</tr>
<tr>
<td></td>
<td>yard cleanliness kits at the beginning</td>
<td>yard cleanliness kits at the beginning</td>
</tr>
<tr>
<td></td>
<td>of school entry.</td>
<td>of school entry.</td>
</tr>
<tr>
<td>2.</td>
<td>The teacher provides guidance on daily</td>
<td>The teacher does not provide guidance</td>
</tr>
<tr>
<td></td>
<td>portfolio filling instructions.</td>
<td>on daily portfolio filling instructions.</td>
</tr>
<tr>
<td>3.</td>
<td>Teachers observe the daily activities of</td>
<td>Teachers observe the daily activities of</td>
</tr>
</tbody>
</table>
4. Teachers provide supervision of the daily activities of learners.

5. Teachers draw the individuals portfolio sheet after the research occurs during 10 days.

Portfolio engineering activities with classroom teacher guides take place regularly for 10 days by recapitulating the portfolio data in the form of student diaries from each class. Data obtained include: the frequency of use of cleaning tools provided in each classroom, namely: 1. Sweep (broom swab and broom stick); 2. Duster; 3. Floor mat; 4. Trash; and 5. White board eraser.

Instruments that used in this study are non-test instruments, namely: *questionnaire*. *Questionnaire uses measurement scale with 3 (three) scale that is: 1 - 2 - 3 which is used to measure the student’s environmental concern then the tested results are analyzed with the aim of obtaining valid items. From the test results of the instrument in Gandamekar 02 primary school state in Rawajulang village Bekasi Regency obtained the following results:

<table>
<thead>
<tr>
<th>Number</th>
<th>Calculation</th>
<th>Results</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Items Validity</td>
<td>The number of valid items is 24 pieces</td>
<td>6 invalid items are not used as instruments.</td>
</tr>
<tr>
<td>2.</td>
<td>Reliability of Measurement Results</td>
<td>$r = 0.90$</td>
<td>The reliability coefficient value of the item is valid.</td>
</tr>
</tbody>
</table>

Data analysis used in this research include descriptive analysis and inferential analysis. Inferential analysis used is Analysis of Variance (ANOVA) Two Direction. Multiple tests were performed by Scheffe test. In the data analysis using the level of significance ($\alpha$) 0.05. Data that has been collected and completed tabulated, before being used to test the hypothesis, first tested the normality of data. Test normality using Kolmogorov Smirnov test. It is relevant hypothesis testing by using the F test through ANOVA. The testing procedure used SPSS software version 16.0.

7 RESULT

First, the test of hypothesis that: “there is influence of portfolio engineering on environmental awareness”. The statistical hypothesis tested were:

$H_0: \mu_{A_1} \leq \mu_{A_2}$

$H_1: \mu_{A_1} > \mu_{A_2}$
By the described test results criteria of Ho are rejected if the price of Sig. < \( \alpha = 0.05 \). Based on the results of calculations using the Two-Way Anova test, we obtained the following results:

Table 4. Summary of Two-Way Anova Test Results the Effects of Portfolio Engineering and School Environment on Environmental Concern

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>194.080</td>
<td>3</td>
<td>64.693</td>
<td>6.367</td>
<td>.001</td>
</tr>
<tr>
<td>Intercept</td>
<td>345781.391</td>
<td>1</td>
<td>345781.391</td>
<td>7</td>
<td>.000</td>
</tr>
<tr>
<td>X1</td>
<td>83.409</td>
<td>1</td>
<td>83.409</td>
<td>8.209</td>
<td>.005</td>
</tr>
<tr>
<td>X2</td>
<td>67.818</td>
<td>1</td>
<td>67.818</td>
<td>6.675</td>
<td>.011</td>
</tr>
<tr>
<td>X1 * X2</td>
<td>45.628</td>
<td>1</td>
<td>45.628</td>
<td>4.491</td>
<td>.036</td>
</tr>
<tr>
<td>Error</td>
<td>1127.781</td>
<td>111</td>
<td>10.160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>347110.000</td>
<td>115</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>1321.861</td>
<td>114</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( R^2 = .147 \) (Adjusted \( R^2 = .124 \))

Based on the results of the test in Table 4, obtained the price of Fcount = 8.209 ** (Sig = 0.005 < \( \alpha = 0.05 \)) then reject Ho at \( \alpha = 0.05 \) which means the first hypothesis which states "there is significant influence of portfolio engineering on the student's environmental concern" are statistically proven. The result of this test means not contradicting the theoretical framework used as the basis for the first hypothesis. Second, hypothesis testing which is intended to prove the hypothesis that: "there is an influence of school environment on environmental concerns". The statistical hypothesis tested were:

\( H_0: \mu B_1 \leq \mu B_2 \)

\( H_1: \mu B_1 > \mu B_2 \)

By the described test results criteria of Ho are rejected if the price of Sig. < \( \alpha = 0.05 \). Based on the result of calculation by using Anova Two direction test in Table 4, we get the result of Fcount = 6.675 * (Sig = 0.011 < \( \alpha = 0.05 \)) then reject Ho at \( \alpha = 0.05 \) meaning that the second hypothesis which states "there is significant influence of the school environment to the student's environmental concerns". The result of this test means that it does not contradict the theoretical framework used as the basis for the proposed second hypothesis.

Third, hypothesis testing which is intended to prove the research hypothesis that: "there is an interaction effect between the variable portfolio engineering and school environment on student's environmental concern". The statistical hypotheses tested were:

\( H_0: \text{Int. } A \times B = 0 \)

\( H_1: \text{Int. } A \times B \neq 0 \)
By the described test results criteria of $H_0$ are rejected if the price of $\text{Sig.} < \alpha = 0.05$. Based on the result of calculation by using test of Two Way Anova on Table 4, we obtained by result of price $F_{\text{count}} = 4.491^* (\text{Sig.} = 0.036 < \alpha = 0.05)$ then reject $H_0$ at $\alpha = 0.05$ meaning hypothesis 3 which states "there is interaction influence between engineering portfolio and the school environment to significant environmental concerns" or tested the truth. The result of this test means that it does not contradict the theoretical framework used as the basis for the proposed third hypothesis. The interaction effects of both variable can be described in following graph:

![Estimated Marginal Means of environmental concerns](image)

Figure 2. Interaction of variable Portfolio Engineering and School Environment on student's environmental Concern

Fourth, hypothesis testing is intended to prove the research hypothesis that: "in industrial school environment there is influence of portfolio on environmental awareness". The statistical hypothesis tested were:

$H_0: \mu A_1 B_1 \leq \mu A_2 B_1$

$H_1: \mu A_1 B_1 > \mu A_2 B_1$

By the described test results criteria of $H_0$ are rejected if the price of $\text{Sig.} < \alpha = 0.05$. Based on the result of calculations using the Two-Way Anova, the test obtained the following results:

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Table 5. Multiple Comparison Scheffe Test Results

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>123.018</td>
<td>1</td>
<td>123.018</td>
<td>9.516</td>
<td>.003</td>
</tr>
<tr>
<td>Intercept</td>
<td>173271.875</td>
<td>1</td>
<td>173271.875</td>
<td>13402.930</td>
<td>.000</td>
</tr>
<tr>
<td>X1</td>
<td>123.018</td>
<td>1</td>
<td>123.018</td>
<td>9.516</td>
<td>.003</td>
</tr>
<tr>
<td>Error</td>
<td>698.107</td>
<td>54</td>
<td>12.928</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>174093.000</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>821.125</td>
<td>55</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. R Squared = .150 (Adjusted R Squared = .134)

Based on the results of the test in Table 5 obtained by the price Fcount = 9,519 ** (Sig = 0.003 > α = 0.05) then reject Ho at α = 0.05 which means hypothesis 4 which states "in industrial school environment there is influence of portfolio on student's environmental concern" or tested the truth. The result of this test means not to contradict the theoretical framework used as the basis for the fourth hypothesis.

Fifth, hypothesis testing is intended to prove the research hypothesis that: "in non-industrial school environment there is influence of portfolio on student's environmental concern". The statistical hypothesis tested were:

\[ H0: \mu A_1B_2 \geq \mu A_2B_2 \]

\[ H1: \mu A_1B_2 < \mu A_2B_2 \]

By the described test results criteria of Ho are rejected if Sig. price. > α = 0.05. Based on the results of calculations using the Two-Way Anova test obtained the following results:

Table 6. Multiple Comparison Results with Scheffe Test

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>2.484</td>
<td>1</td>
<td>2.484</td>
<td>.328</td>
<td>.569</td>
</tr>
<tr>
<td>Intercept</td>
<td>163689.984</td>
<td>1</td>
<td>163689.984</td>
<td>2.162</td>
<td>.060</td>
</tr>
<tr>
<td>X1</td>
<td>2.484</td>
<td>1</td>
<td>2.484</td>
<td>.328</td>
<td>.569</td>
</tr>
<tr>
<td>Error</td>
<td>408.874</td>
<td>54</td>
<td>7.572</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>164356.000</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>411.357</td>
<td>55</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. R Squared = .006 (Adjusted R Squared = .012)
Based on the results of the test in Table 6, obtained the price $F_{count} = 0.328^{**} \ (Sig = 0.569 > \alpha = 0.05)$ then accept $H_0$ at $\alpha = 0.05$ which means hypothesis 5 which states "in non-industrial school environment there is influence portfolio of significant environmental concerns" or tested the truth. The result of this test means not contradicting the theoretical framework used as the basis for the fifth hypothesis submission.

8 DISCUSSION

The results of this study, which are analyzed by hypothesis testing as described above, can be obtained that the test of all four hypotheses is entirely tested. Empirically, the results of this study do not conflict with the theoretical framework described in the literature review (Chapter II). The results of this study (based on the results of the first hypothesis testing) further reinforce that, indicating that providing portfolio engineering with teacher instruction proved more effective than without teacher instruction.

The second fact (based on the results of the second hypothesis test), shows that schools in industrial environment have the better environmental concerns than schools in non-industrial environments. Based on the fourth hypothesis testing, it provides that the high level of environmental concern is determined by the school environment. School students in industrial environments provided portfolio engineering with teacher instruction show a higher environmental dreadful than portfolio engineering without the teacher instruction. On the other hand, based on the fifth hypothesis testing, the fact shows that, students in non-industrialized schools provided portfolio engineering without the instruction of teachers, show a higher environmental concern than portfolio engineering with teacher instruction.

The test of all five hypotheses above, conforms to the conception conveyed by Anderson, *Introduction to Communication Theory and Practice*, that caring is the mental process of an awareness due to a dominant and predominant impulse hence the response of stimuli. In this study on portfolio engineering variables and school environment can be synchronized with the stimulus that encourages the response of learners to have environmental awareness. Gilmour & Duck (1983), *The Development of Social Psychology*, state that caring is essentially a response to stimuli, in which it affects a person's behavior.

From the nature of the portfolio also supports the existence of environmental concerns as described *Assessment of Standards-Based Learning Outcomes*, with the portfolio then what the learner, including student participation and proof of self-reflection. Ultimately from the results of this study the determinants of school environments in which portfolio engineering is applied to differentiate students' environmental concerns. In schools (industrial environments), portfolio engineering will succeed in cultivating the student's environmental concerns while the teachers provide instruction guides to the students in documenting their activities in maintaining school cleanliness. On the other hand, schools located in non-industrial areas will be more successful in generating their environmental
concerns if teachers do not give instructions to students in documenting their activities to maintain the cleanliness of the school environment.

These two circumstances are key in applying portfolio engineering in schools especially in providing a positive influence on the growth of student's environmental concerns. The promotion of character education should not just a leap service but has an action plan for practice. In order words, education policy should take the lead to actualize moral education. Taken together, parents, teachers, and administrators as stakeholders, should join this camp to encourage students to manifest those good values in their lives. Agboola, & Tsai (2012) bring character Education Into Classroom.

9 CONCLUSION

Based on the description of research results and discussion it can be concluded as follows: First, there is the effect of portfolio engineering on environmental concerns. Elementary students provided with portfolio engineering with teacher instruction is higher than elementary students who are provided with portfolio engineering without teacher instruction. Second, there is the influence of the school environment on environmental concerns. Elementary school students who attend school in industrial environments have high environmental awareness than elementary students who attend school in non-industrial environment. Third, there is an interaction effect between the variables portfolio engineering and the school environment on the students' environmental awareness. Fourth, the elementary school students in industrial environment the student that given the portfolio engineering with teachers instruction, have higher environmental concern than those not given the teacher’s instructions. Fifth, elementary school students enrolled in non-industrial environments provided with portfolio engineering along with teacher instruction have a lower level of environmental awareness than those not given teacher instruction.

REFERENCES


The Center for Curriculum and Books. (2011) Guidelines for the implementation of character education (based on experience in the pilot education unit), in order to strengthen the implementation of character education. Jakarta: The Center for Curriculum and Books, Research and Development Agency of the Ministry of National Education.


