

## **Inception of Eco-psychology Elements in Environmental Education among Teacher Trainees**

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### **ABSTRACT**

*Even though Environmental Education has been implemented since 1990s in national curriculum, still some researchers finding indicated that more people believed and care of their environment but not reflected to their daily behaviour. Some researchers also stated that this is because of our psychological and spiritual (psyche) is split from the natural world. So, we need to heal our mental health especially our psychological and re-embed psyche (spiritual) in the natural world. This study assessed the impact of inception ecopsychology elements in Environmental Education among trainee teachers on attitudes toward environment (ATE), ecopsychological and spiritual values. A mixed methods design was used to evaluate the effect of inception ecopsychology elements in Environmental Education on ATE, ecopsychological and spiritual values. Initial findings showed that there are significant differences on ATE, ecopsychological and spiritual values between experimental and control groups. Experimental groups who was taught with ecopsychology elements in Environmental Education teaching and learning activities showed slightly higher on ATE, ecopsychological and spiritual values mean scores. Qualitative findings also showed that the respondents from experimental groups believed they considered changing their attitudes, ecopsychological and spiritual values toward environment after participated in the class. Findings from this study suggested the implementation of EE should incept ecopsychology elements in order to strengthen internal motivation and sensitivity toward environments. Therefore, suggested activities should be incepted in Environmental Education without denying existing activities and syllabus.*

*Key words: ecopsychology, environmental education, affective attitudes toward environment, ecopsychological values, spiritual values*

### **ABSTRAK**

*Walaupun pendidikan alam sekitar telah dilaksanakan sejak 1990-an, dapatan sesetengah pengkaji menunjukkan lebih ramai orang percaya dan mengambil berat tentang alam sekitar tetapi tidak dicerminkan oleh tingkah laku seharian mereka. Sesetengah pengkaji juga menyatakan bahawa perkara ini adalah disebabkan oleh aspek psikologi dan spiritual terpisah dari alam semula jadi. Dengan itu kita perlu memperbaiki kesihatan mental terutamanya psikologi dan menerapkan aspek spiritual dalam dunia semula jadi. Kajian ini menilai impak memulakan unsur ekopsikologi dalam pendidikan alam sekitar dalam kalangan guru pelatih tentang sikap terhadap alam sekitar, nilai-nilai ekopsikologi dan spiritual. Satu reka bentuk bercampur telah digunakan untuk menilai pengaruh unsur-unsur memulakan ekopsikologi dalam pendidikan alam sekitar tentang sikap terhadap alam sekitar, nilai-nilai ekopsikologi dan spiritual. Dapatan awal menunjukkan bahawa terdapat perbezaan yang signifikan tentang sikap terhadap alam sekitar, nilai-nilai ekopsikologi dan spiritual antara kumpulan eksperimen dan kumpulan kawalan. Kumpulan eksperimen yang diajarkan unsur-unsur ekopsikologi dalam aktiviti pengajaran dan pembelajaran pendidikan alam sekitar menunjukkan nilai min skor yang tinggi sedikit. Dapatan kualitatif juga menunjukkan responden dari kumpulan eksperimen percaya mereka mengubah nilai-nilai sikap, ekopsikologi dan spiritual terhadap alam sekitar setelah mengambil bahagian dalam kelas. Dapatan kajian ini menyarankan agar pelaksanaan pendidikan alam sekitar dimulakan dengan unsur-unsur ekopsikologi untuk memperkukuhkan motivasi dalaman dan sensitiviti terhadap alam sekitar. Oleh*

*itu aktiviti yang dicadangkan sepatutnya dimulakan dalam pendidikan alam sekitar di samping aktiviti dan silibus sedia ada.*

*Kata kunci: ekopsikologi, pendidikan alam sekitar, sikap afektif terhadap alam sekitar, nilai-nilai ekopsikologi, nilai-nilai spiritual*

## INTRODUCTION

Environmental Education (EE) has been recognized as an avenue for enhancing people's understanding of the issues and the commitments needed for environmental change. It has been implemented since 1990s in Malaysian National Curriculum. However, research on EE finding shows that even though teachers agree that EE is very important but still not reflected in their commitment into action. In Malaysia, the United Nations Economic and Social Commission for Asia and the Pacific (2003) indicated that environmental awareness is still in its preliminary stage in Malaysia. Therefore, after years of effort to try and integrate environmental education, studies keep revealing that Malaysians have not reached a certain desired level of commitments towards our environment (Daniel et al. 2006). Daniel et al. (2006) also stated that there is still a great need for Malaysians to adopt more environmental conscious habits.

Their findings not surprisingly because in reality, we will not fight for something unless we really love it (Orr 1994) like our family, siblings, ourselves or something really meaningful in our life. In other part, some researchers mentioned that our planet healthy is depending on our mentally health and our destructive environmental behaviors stem from our sense of disconnection to the natural world (Canty 2007; Osman Bakar 2007; Metzner 1999; Macy & Brown 1998; Howard 1997; Clinebell 1996; Roszak et al. 1995 and Roszak 1992). They also stated that the violence we do to the 'natural world' results from our psychological and spiritual separation from nature. Therefore, we need to heal our mental health especially our psychological and re-embed psyche in the natural world. Our planet's ecological health is directly related to the mental health of its inhabitants. We need to deeply feel that responsibility to take care of the environments are something like we take care of ourselves or our beloved family and siblings, putting psyche back into natures and aware that separation both will suffering human and natures. The combination of ATE, ecopsychological and spiritual values is the key to strengthen inner self toward environment. That's why the inception of ecopsychology element in Environmental Education is very important.

Figure 1 shows how the inception of ecopsychology elements in Environmental Education. In order to strengthen the inner self toward environments, ecopsychology concentrating on developing interconnectedness relationship between nature and human based to the three main concept. Firstly by putting psyche back to natures and vice versa. Second by expanded relationship with natures and definition of self: nature as self or family. Lastly by aware that the separation both will suffering natures and human, also realizing that the need to healing both. Modification with Ary Ginanjar's (2005) concepts of spiritual quotient, we indicated area called Psyche Cleaning Zone (PCZ). In order to strengthen inner self toward environments, we need to go through PCZ.

Ary Ginanjar (2005) stated that if peoples can expanded the definition of self, having strongest inner self and focused on the nature of their relationship with Super Force, they always have the feeling that he is answerable to Super Force that he must try to secure divine pleasure, that his actions must be in accordance with their Super Force's laws. Incepted of ecopsychology elements in EE is very important to develop attitudes (affective domain in order to strengthen environmental sensitivity), ecopsychological values (interconnectedness between natures and human), and spiritual values (the sense of answerable to Super Force about their

responsibility to take care of the environment and to secure divine pleasure). In order to go through PCZ, EE should develop these three aspects successfully.

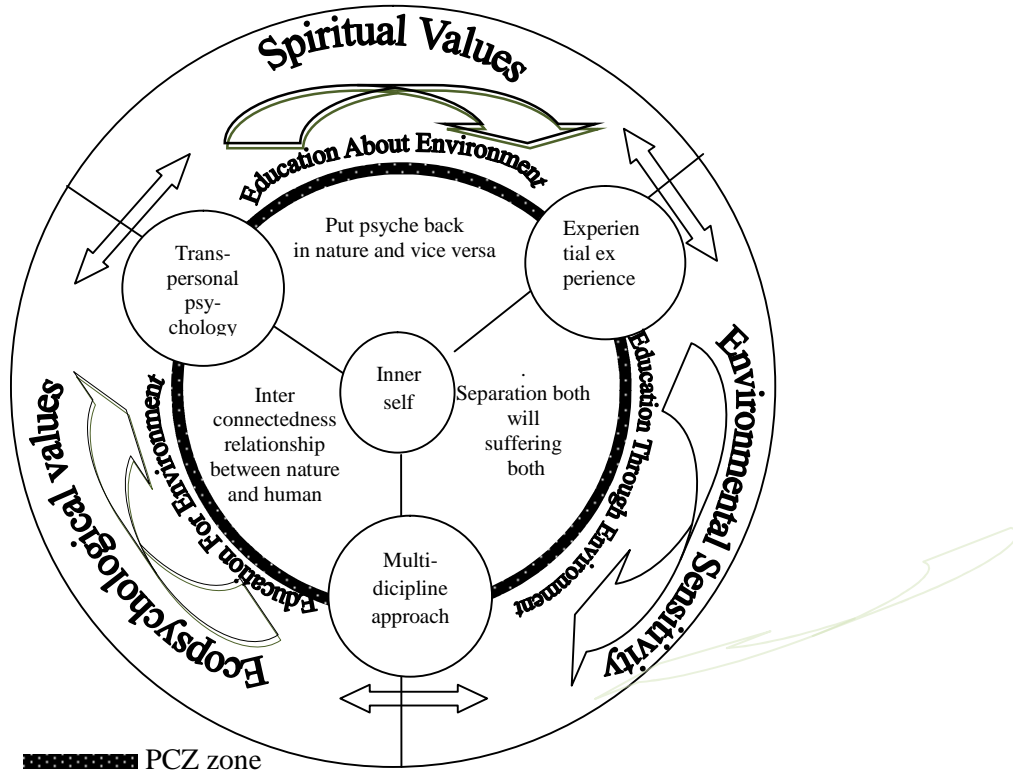


Figure 1. Inception of ecopsychology elements in environmental education

## RESEARCH OBJECTIVE

The objectives of this research are:

1. To determine the level of ATE, ecopsychological and spiritual values before the inception of ecopsychology elements in Environmental Education.
2. To determine the level of ATE, ecopsychological and spiritual values between experimental and control groups after inception of ecopsychology elements in Environmental Education.

## RESEARCH METHODOLOGY

Mixed method design was used in this study. Both quantitative and qualitative method was used to evaluate the program but the priority still given to quantitative methods. Qualitative data collection is used to support quantitative findings. Rogers et al. (2003) used quantitative and qualitative tools in their study. Figure 2 shows the mixed method used in this study. For quantitative portion, existed instruments are modified and used to evaluate trainee teacher's ATE, ecopsychological and spiritual values considered as program outcome to capture ideas on how EE program with inception of ecopsychology elements influenced teacher trainees. A

quasi-experimental design was used as quantitative tool in this study and triangulation with qualitative tools using modified embedded design.

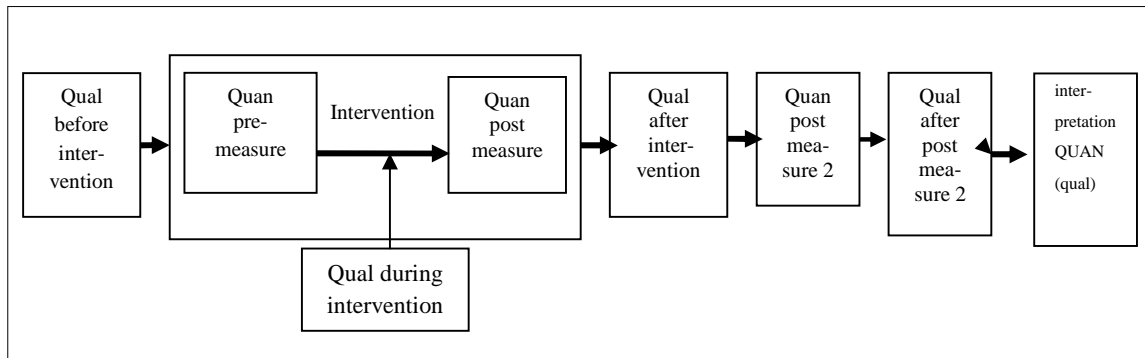


Figure 2. Mixed method design

Source: adopted from Cresswell & Clark 2007

Table 1 shows activities conducted in mixed method design. We used qualitative methods before the intervention, during the intervention and after the intervention. Qualitative data were collected from selected trainees before the intervention using open interviews to elicit their understanding of the meaning of having positive attitudes toward environments, relationship between human and natures and the meaning of spiritual values toward environments. During the intervention, the investigator interviewed cleaners in the college to get information about certain aspect considered as positive or negative action and attitudes toward environments among the trainees. Interviews and personal notes are used as qualitative portion after the intervention to elicit their understanding of the meaning of having positive attitudes toward environments, relationship between human and natures and the meaning of spiritual values toward environments beside to elicit their experience on ecopsychology activities in the treatments. Therefore, after the intervention, only informants from experimental groups are interviewed.

Table 1. Activity in mixed method design

Qual before the intervention	Quan pre measure	Qual during intervention	Quan post measure	Qual after intervention	Quan post measure 2	Qual after post measure 2	Interpretation QUAN (qual)
Interview 12 respondents from both groups (6 from each groups)	Pretest – using questionnaires (4 likert scales)	Interview cleaner in the college Observation in the college	Post test using questionnaires (4 likert scales)	Interview – 6 respondent from experimental groups. Interview cleaner workers in the college Personal notes	Post test 2 after 4 month the intervention (treatment activities) using questionnaires (4 likert scales)	Interview 6 respondent from experimental groups	Interpretation QUAN (qual) Qualitative finding to support quantitative findings

## Sample

Purposive sampling is used to choose the samples. The samples are chosen from January 2008 intakes of Graduate Teachers Education Courses (*Kursus Perguruan Lulusan Ijazah*) trainees in Batu Lintang Teacher Training Institute. Even though there are 27 Teacher Training Institute (TTI) in Malaysia but based on enrolment data until 31 December 2007, only 4 TTI considered having ethnicity balance with 7:2:1 (Malay, Chinese, Indian) and religion 7:3 (Muslim and others). Six groups (N=115; Male=50; Female=65) in semester two are chosen and divided into two groups (experimental and control groups. Three classes ( $n = 58$ ) received the inception of ecopsychology in activities in E.E classes and the other three classes ( $n = 57$ ) received the traditional activities in E.E classes.

## Measuring ATE, Ecopsychological and Spiritual Values

Attitudes toward environment in this study are limited to five affective components of attitudes in Affective Domain Taxonomy which is acceptance, respond, evaluation, organization and internalization. The instruments used to evaluate attitude toward environment (affective domain) are modified from Leeming et al., modification with Bloom, Krathwohl and Masia (1988) affective domain taxonomy. The format of the instruments is fourth likert scales. The reliability test for attitudes toward environment test was  $r = .965$ . The factor analysis conducted shows the appropriate values (KMO = .647; Barlett's test = .000). All data analyze using independents samples t test and descriptive analysis. In order to measure ecopsychological self values, the instruments used is modified from St. John and McDonald (2007). The reliability test for ecopsychological self values was  $r = .8718$  and factor analysis results: (KMO = .842; Barlett's test = .000). Instruments to evaluate spiritual values are adapted from UPM and Medical Science University College, Higher National Research Institute, Cyberjaya. Reliability results is  $r = .8638$ ; factor analysis: (KMO = .761; Barlett's test = .000). All data analyze using independents samples t test and descriptive analysis. Content validity for the ATE instruments has been done by Dr. John Davis from University Naropa, Associate Prof. Dr. David St. John from University of Detroit-Mercy, Prof. Azizan Burhanuddin from Universiti Malaya, Associate Prof. Dr. Rahil Mahyuddin and Associate Prof. Dr. Ahmad Makmom Abdullah from University Putra Malaysia.

## Qualitative Data Collecting Procedures

For the qualitative portion of this study, a total 12 individuals were interviewed (6 trainees from each group (experimental and control groups) before the intervention and 6 person interviewed after the intervention. Samples are selected randomly by their formal EE lecturers. Semi structured question consisted focus on the following ideas:

- ❖ self rated attitudes toward environment (self rated: 1- 5: 1- very low; 5 –very good)
- ❖ definition of attitudes toward environment
- ❖ action taken as positive attitudes toward environment
- ❖ meaning of relationship with nature
- ❖ opinion on natures as self and family
- ❖ self rated relationship with natures (very close, close, normal, not close)
- ❖ opinion on natures can increase spiritual values and how?
- ❖ meaning of spiritual values
- ❖ what differences before and after intervention (for post interview) – if any differences
- ❖ opinion on activities in EE class (for post interview)

Following the data collection, all interviews data were transcribed. The transcripts were analyzed and similar comments among interviewees are noted.

**Treatment Activities**

The treatment in this study are modified based on recent researchers such as Canty (2007), Fisher (1999), Macy and Brown (1998), Clinebell (1996), Calahan (1995), Conn (1995), and Macy (1995). In order to strengthen the inner self toward environment, some activities to connect spirituality, ecopsychological values and ATE through, in and about the environment are conducted. For example, discussing on non-dualism concept in life, fantasy communication using transpersonal psychology, one day in the pond also using transpersonal psychology and other activities injected with ecopsychology elements. Figure 3 shows the activities incepted ecopsychology elements using transpersonal psychology, experiential education and multidiscipline approaches. Trial treatment has been done on 21 February until 4 March 2008 to test the treatment activities.

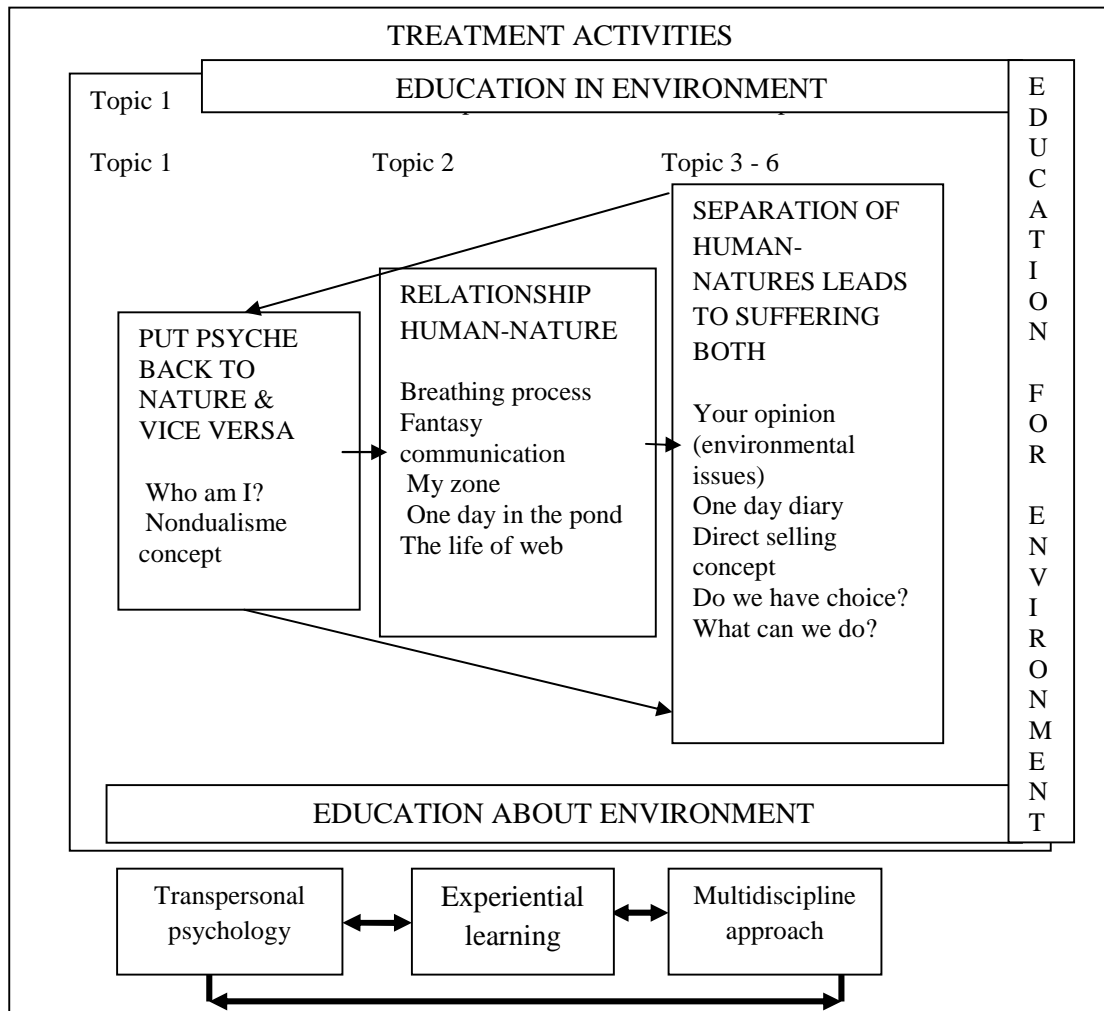


Figure 3. Treatment activities based on ecopsychology in environmental education teaching and learning

Ecopsychology elements incepted in the activities without denying existed approach suggested in the syllabus. Three approach suggested in the syllabus are education for, in and

about environment and using experiential or multidiscipline approaches. This study incepted ecopsychology elements by selecting teaching and learning activities which is incepted ecopsychology elements and incepted transpersonal psychology approach.

## FINDINGS AND DISCUSSION

### Research objective 1

*What is the level of ATE, ecopsychological and spiritual values before the inception of ecopsychology elements?*

In order to answer the first question, level of ATE, ecopsychological and spiritual values are divided into three category based on four likert scales, low level (1.00 - 2.00), moderate level (2.01 - 2.99), and high level (3.00 - 4.00). Table 2 presents the level of ATE based on Affective Domain Taxonomy. Results indicated that respondent's acceptance components are at high level ( $M=29.11$ ,  $SP=2.07$ ) but other components such as respond ( $M=23.68$ ,  $SP=2.87$ ), evaluation ( $M=24.04$ ,  $SP=3.35$ ), organizational ( $M=23.50$ ,  $SP=2.64$ ) and internalization ( $19.39$ ,  $SP=2.71$ ) categories are still at moderate level before the inception of ecopsychology elements in EE. Based on Bloom, Krathwohl and Masia (1988), acceptance level in Affective Domain Taxonomy means that the person are aware with existing phenomena, starting giving attention on certain phenomena and ready to accept the phenomena. At this level, there is not guarantee the person will change their action according to the phenomena but for sure they have knowledge on environmental issues.

Qualitative data collection results reported that of 12 individuals interviewed, 2 reported putting themselves at scale 2 for their attitude toward environment, 4 at scale 3 (moderate) and 6 at scale 4 (good) and none of the informants putting themselves at scale 5 (very good). Even though there are 6 respondents putting themselves as having a good attitudes toward environment but most of them are concentrated at certain aspect as a good attitude toward environments. All the respondents defined good attitudes toward environments as a small scope. All respondent defined good attitudes toward environments by using themes like involving in greening (planting flowers or gardening), having proper throwing rubbish system (but still not separating wet and dried waste), electricity and water usage economically. Most of the actions defined as good attitudes toward environment are the act which is involving with their own comfortable.

Table 2. ATE based on Domain Affective Taxonomy before inception of ecopsychology elements

Domain affective categories	No. of items	Mean (S.P)	Level categories for ATE
Acceptance	9	29.11 (2.07)	High (3.23)
Respond	9	23.68 (2.87)	Moderate (2.63)
Evaluation	9	24.04 (3.35)	Moderate (2.67)
Organizational	8	23.50 (2.64)	Moderate (2.93)
Internalization	7	19.39 (2.71)	Moderate (2.77)

N=115

Table 3 presents the level of ecopsychological (2.86) and spiritual values (2.94) before the inception of ecopsychology elements are at moderate level. Qualitative finding indicated out of

12 respondents has been interviewed, 8 of the respondents scaled themselves as having normal relationship with natures, 2 scaled themselves as closed relationship and 2 are not closed. All the respondents also have limited definition of relationship. Some themes defined as relationship with natures are 1) Natures are created to fulfill human needs; 2) Natures have the same right as human and this right should be take care by human to make sure natures serves a good quality of resources for human. Qualitative data collection also presented, of 12 interviewed, 10 agreed to assume natures as family and siblings but 1 informant can assume natures as self and 1 of the informants said that he cannot assume natures as self, family or siblings. He stated that:

*“The word assumed itself is not same with the word same..it is a different thing...we can aspect it. I agreed that natures existed and created with us in this planet, but our caring to natures...is different with how we cares of our nose, our family or ourselves..if we just to assume that natures as us or our siblings, ...I cannot accept that.”* (O3, interviewed on 20 June 2008)

Table 3. Level of ecopsychological and spiritual values before inception of ecopsychological elements

Variables	No. of item	Mean (S.P)	Level
Ecopsychological values	15	42.87 (4.13)	Moderate (2.86)
Spiritual values	20	58.89 (4.27)	Moderate (2.94)

N=115

This finding showed that even though the respondents believe there are relationship between human and natures but their definition of relationship between natures and human are limited to nature's function to serve human. Even though they believed natures having the right like human but still they considered at the end, the right is to serve human as resources and accepted natures as siblings, but one respondent cannot accept natures as family, siblings or self. This definition showed the existence of human ego and believed that natures are controlled by human.

***Is there any differences on ATE, ecopsychological and spiritual values score mean between experimental and control group before the inception of ecopsychology elements?***

Independent sample *t test* are used to compare the differences of ATE, ecopsychological and spiritual values between the two groups. Result in Table 4 reported that there is no significant differences on ATE scores mean between experimental ( $M=121.01$ ,  $SP=9.01$ ) and control groups ( $M=118.35$ ,  $SP=10.61$ ;  $t(113)=1.453$ ,  $p=.149$ ) before the inception of ecopsychology elements in Environmental Education. Even though experimental groups scores mean on ATE higher than control groups but the magnitude of the differences in the means was very small (eta squared =.001).

Result also indicated that there is no significant differences on ecopsychological values between experimental groups ( $M=43.36$ ,  $SP=3.52$ ) and control groups ( $M=42.38$ ,  $SP=4.65$ ;  $t(104.3)=1.857$ ,  $p=.208$ ) before the inception of ecopsychology elements in Environmental Education. The magnitude of the differences was very small (eta squared=.01). Findings in Table 3 presented that there is no significant differences on spiritual values between experimental groups ( $M=59.62$ ,  $SP=4.69$ ) and control groups ( $M=58.15$ ,  $SP=3.70$ ;  $t(107.9)=1.857$ ,  $p=.066$ ) before the inception of ecopsychology elements in Environmental Education. The magnitude of the differences also was very small (eta squared=.03).



Qualitative data collection findings also indicated that all the respondents (from both groups) are not sure their relationship with natures. They have limited definition of relationship with natures (ecopsychological values) and defined relationship with natures as the function of natures to be serves resources to humans. They agreed that there is the right for natures and believed that human should fulfill the rights so natures can serve a better quality and quantity for humans. They also limit the themes of agreeing that natures can increased spiritual values as 1) Natures provided a relaxation process; 2) Grateful because are given resources; 3) Awed with the greatest creation of the Super Force. All the informants agreed that natures can increased their spiritual values but at the same time they denied that this guiding their action especially action connecting with conservation of natures in their daily life. For example, of 12 interviewed, 8 of the informants said that their shopping habits or shopping decisions (especially regarding choosing environmental friendly products) are not guiding by this believe.

This finding indicated similarity between both groups before the inception of ecopsychology elements in EE on attitudes toward environment, ecopsychological and spiritual values.

Table 4. Independent sample t-test for ATE, ecopsychological and spiritual scores mean between groups before the inception of ecopsychology elements

Variables (Groups)	N	M	SP	t value	Sig. (p) Two tail	$\eta^2$
Experimental groups	58	121.01	9.01	1.453	.149	.001
Control groups	57	118.35	10.61			
Levene's test to equal variances assumed: $F = 2.105, p = 0.149$ (ATE)						
Experimental groups	58	43.36	3.52	1.266	.208	.01
Control groups	57	42.38	4.65			
Levene's test to equal variances assumed: $F = 6.573, p = .208$ (Ecopsychological values)						
Experimental groups	58	59.62	4.69	1.857	.066	.03
Control groups	57	58.15	3.70			
Levene's test to equal variances assumed: $F = 5.836, p = .066$ (Spiritual values)						

Levene's test show that *p* values for equal variances assumed have been used by M: Mean, SP: standard deviation; Sig: significant

## Research Objective 2

### *What is the level of ATE among the respondents after the inception of ecopsychology elements?*

Descriptive statistics are conducted to determine the level of ATE, ecopsychological and spiritual values after the inception of ecopsychology elements in EE. Findings in Table 5 reported that ATE level are moved to high level from moderate after the inception of ecopsychology elements in EE among experimental group's respondent. Results indicated that ATE for acceptance (3.34), respond (3.21), and internalization (3.64) are increased at high level but evaluation (2.91) and organization (2.82) categories are still at moderate level. But even though the two categories (evaluation and organization) are still at moderate level but there is

an increased scores mean on ATE among the respondents after the inception of ecopsychology elements in EE.

Findings indicated that most of the categories level for attitudes moved to high level except for evaluation/valuing and organization but it showed increased on mean for the level. This findings is almost similar with recent research on ecopsychology such as Bradley (1997), Calahan (1995), Conn (1995) and Macy (1995). Their findings showed that ecopsychological nurtures did deliberately enhanced the human relationship with natures can have positive effects in the lives. Participant believed they had psychologically changed in the sense of connection self, to the transpersonal experiences with natures, spiritual development across natures and vice versa and emotionally attuned with the Earth.

Table 5. Level of attitudes toward environment based on Affective Domain Taxonomy

Affective domain components	No. of items	Mean (S.P)	Level of ATE
Acceptance	9	30.09 (2.54)	High (3.34)
Respond	9	28.93 (3.19)	High (3.21)
Evaluation	9	26.20 (3.50)	Moderate (2.91)
Organization	8	22.60 (2.67)	Moderate (2.82)
Internalization	7	25.51 (2.83)	High (3.64)

***Is there any differences on ATE, ecopsychological and spiritual values score mean after inception of ecopsychology elements for experimental groups?***

Table 6 presents descriptive statistics finding that there is differences on ATE, ecopsychological and spiritual values scores mean on experimental groups after the inception of ecopsychology elements in EE.

Table 6. Scores mean differences for ATE, ecopsychological values and spiritual values for experimental groups after inception of ecopsychology elements

Variables	Experimental Group (KR)			
	Pre test		Post test	
	Scores mean (SP)	Level	Scores mean (SP)	Level
Attitudes (ATE)	121.01 (9.00)	Moderate (2.88)	136.87 (11.10)	High (3.25)
Ecopsychological values	43.36 (3.52)	Moderate (2.89)	51.56 (4.88)	High (3.43)
Spiritual values	59.62 (4.69)	Moderate (2.98)	66.78 (6.12)	High (3.34)

SP= standard deviation

Scores mean for ATE are increased to high level ( $M=136.87$ ,  $SP=11.10$ ) compare to the scores mean during the pre test which is still at moderate level ( $M=121.01$ ,  $SP=9.00$ ). Ecopsychological values scores mean also increased to high level ( $M=51.56$ ,  $SP=4.88$ ) compare to the scores mean during the pre test which is still at moderate level ( $M=43.36$ ,  $SP=3.52$ ). Spiritual values scores mean during the pre test also at moderate level ( $M=59.62$ ,  $SP=4.69$ ) compared to the scores mean after the post test ( $M=66.78$ ,  $SP=6.12$ ). The ATE level are increased to high level (3.25) from moderate level (2.88), and ecopsychological values increased to high level (3.43) from moderate level (2.89), spiritual values level also moved to high level (3.34) from moderate level (2.98). This finding examines that the inception of ecopsychology elements in Environmental Education do increased participant's scores mean on ATE, ecopsychological and spiritual values.

Table 7 also indicates that there is a difference between pre test and post test scores mean on ATE, ecopsychological and spiritual values for experimental groups. A paired samples t-test was conducted to evaluate the impact of the intervention on experimental groups scores mean on ATE ecopsychological and spiritual values. There was a statistically significant increased on ATE scores from pre test ( $M=121.01$ ,  $SP=9.00$ ) to post test ( $M=136.87$ ,  $SP=11.10$ ),  $t(57)=11.177$ ,  $p < .05$ . The eta squared statistic (.69) indicated a large effect size.

There is a statistically significant increase on ecopsychological values scores from pre test ( $M=43.36$ ,  $SP=3.52$ ) to post test ( $M=51.56$ ,  $SP=4.88$ ),  $t(57)=10.937$ ,  $p < .05$  and the eta squared statistic (.67) also indicated a large effect size. Findings also indicated that there is a significant difference on spiritual values increased from pre test ( $M=59.62$ ,  $SP=4.69$ ) to post test ( $M=66.78$ ,  $SP=6.12$ ),  $t(57)=9.587$ ,  $p < .05$ . The eta squared statistic (.67) also indicated a large effect size.

Table 7. Paired sample t-test on ATE, ecopsychological and spiritual values for experimental groups between pre test and post test

Paired	Mean (SP)	<i>t</i> value	Sig. ( <i>p</i> ) Two tail	Eta squared
Pre test – post test (attitude)				
1. Pre test	121.01 (9.00)	11.177	.000	.69
2. Post test	136.87 (11.10)			
Pre test – post test (ecopsychological values)				
1. Pre test	43.36 (3.52)	10.937	.000	.67
2. Post test	51.56 (4.88)			
Pre test – post test (spiritual values)				
1. Pre test	59.62 (4.69)	9.587	.000	.61
2. Post test	66.78 (6.12)			

$P < .05$ ,  $N = 115$

Qualitative results also indicated that there is an increased on ATE, ecopsychological and spiritual values. In describing the ways in which they believed their ATE are increased, participant discussed exemplifying themes pertaining to an increased attitudes toward environments such as, 1) Expanding definition of positive attitude toward environment, 2) More sensitive with natures – example they tried to say thank you to natures, always asking themselves to show a proved for that thank you, 3) Feel guilty when making some decision regarding environment, for example while shopping. Certain action they have taken are, 1) taking less plastic bag while shopping, 2) bringing own bag while shopping, 3) less taking polystyrene to buy a food but spent more time eating at the canteen with friends, 4) Read the

label while purchasing thing and feel guilty while choosing products in the market, 5) Using electricity and water economically, 6) Thinking and consider on environment in some decisions their made- automatically saying thank you while using water, electricity or during breathing process. One of the respondents described:

*“Just like what I said before, it makes me conscious to do reflection on my daily action. Honestly, even though before this, I liked something clean but there is still a lot thing in my life that involving in environmental pollution. For example, while shopping, I choose the products based on my interest and price...i really don't care about the packages; I am not separating wet and dry waste. That's why I said I have increased or experienced ...right now, I always questioning what I am doing and always feel guilty while shopping, this makes me think twice to choose the products.”* (SR03, interviewed on 25 October 2008)

One respondent described:

*“Before this...I never say thank you to water while I using it, I know I should thankful but never says it or argued what have I done ...knowing but not doing. After participate in your class, every time I switch on the water pipe, automatically I remember to say thank you to water and especially God because giving this kind of resources to fulfilled our need. I think it reflected from our activities (emm...Who am I, fantasy communication). What I think it is an achievement for me is I closed the water pipe if I saw the water pipe is not closed correctly...and I think that is reflected from saying thank you. For me, this is an achievement in my life.”* SR02, interviewed on 25 October 2008)

Interview with cleaner workers also indicated some change in action in the college such as more paper to recycle given to the cleaners, less over-loaded waste in the plastic bags put beside the major rubbish bin in the college. The cleaners also mentioned that less food waste are thrown to the sink in the toilet.

Participants also described exemplifying themes on ecopsychological values to show there is an effect on ecopsychological values. Of 6 interviewed, all respondents putting their relationship with natures are much closed. All the respondents explained that they have experienced to be more closeness to natures after the intervention. Some of the themes identifying explained by the respondents to discussed their relationship with natures are, 1) Humans are depending on natures 24 hours a day – for example oxygen, 2) Feeling that they will get an impact/effect when the environments not healthy for example, quality of water and air, 3) Questioning themselves to proved in action when saying thank you to environment or feel very connected with natures, 4) Natures are great than human, 5) They feel very connectedness with natures – natures can make them remember on their responsibility to take care the environments, and their spirituality life, 6) Humans is only a very small entity created in this planet compared to other entity.

Some themes described on spiritual increase are, 1) Self reflection on what they have done, 2) Thankful and grateful to Super Force and questioning themselves to put that thankful into action, 3) Human are only a small entity created in this world compared to other creation, 4) Feel guilty when involved in environmental pollution. Some personal notes from respondents described:

*“Before this, I taught that I am really a good believer and practice in my belief but right now I understand that I always forgot to put some decision about environment while shopping or in my daily life..that actually some part I forgot about the connected with my spiritual values...thanks because make me aware that living in environmental friendly is part of how we shows our appreciating and thanks God”* (PSP07, personal notes)

*“After joining the classes, I tried to say thank you to water especially when I used it while bathing, shampooing and now I closed the water pipe while brushing my teeth, shampooing.*

*When shopping, I tried to choose minimum packaging...I think we have choice in this life...we want it or not..."* (PM17, personal notes)

Recent studies by Canty (2007), Jagel (2007) and Bradley (1998) supported the finding. Participants believed they experienced psychological change such as deeper relationship with spouse, family, friends, animals and other things. They also believed that they experienced spiritual renewal. This finding also showed that the respondents increased their spiritual scores and supported by personal notes from PSP07. This showed that the respondents experienced spiritual renewal and psychological changed.

***Is there any differences on ATE, ecopsychology and spiritual values scores mean between experimental and control groups after the inception of ecopsychology elements?***

An independent samples *t*-test also was conducted to compare the ATE scores mean between experimental and control groups after the inception of ecopsychological elements in EE. Table 8 presented quantitative data. There is a significant differences on ATE scores mean between experimental groups ( $M=15.86$ ,  $SP=10.81$ ), and control groups ( $M=5.51$ ,  $SP=9.57$ ),  $t(111.8) = 5.441$ ,  $p=.000$ ). The magnitude of the differences in the means was large (eta squared = .20).

There is also a significant differences in ecopsychological scores mean between experimental groups ( $M=8.21$ ,  $SP=5.71$ ), and control groups ( $M=3.45$ ,  $SP=4.81$ ),  $t(113) = 4.820$ ,  $p=.000$ ). The magnitude of the differences in the means was large (eta squared = .17). Scores mean for spiritual values also showed a differences after the inception of ecopsychology elements in Environmental Education between experimental groups ( $M=7.15$ ,  $SP=5.68$ ), and control groups ( $M=3.43$ ,  $SP=4.94$ ),  $t(113) = 3.737$ ,  $p=.000$ ). The magnitude of the differences in the means was large (eta squared = .11). Table 8 shows the independent sample *t*-tests for differences scores mean between pre test and post test on affective domain attitudes and ecopsychological values among experimental and control groups.

Table 8. Independent *t*-test on ATE, ecopsychological and spiritual values between pre test and post test among experimental and control groups

Variables (groups)	N	M	SP	<i>t</i> value	Sig. ( <i>p</i> ) Two tail	$\eta^2$
Experimental group	58	15.86	10.81	5.441	.000	.20
Control group	57	5.51	9.57			
Levene's test for equal variances assumed: $F = .019$ , $p = .000$ (affective attitudes)						
Experimental group	58	8.21	5.71	4.820	.000	.17
Control group	57	3.45	4.81			
Levene's test for equal variances assumed: $F = 1.939$ , $p = .000$ (ecopsychological values)						
Experimental group	58	7.16	5.68	3.737	.000	.11
Control group	57	3.43	4.94			
Levene's test for equal variances assumed: $F = F = 1.471$ , $p = .000$ (spiritual values)						

Levene's test show that *p* values for equal variances assumed have been used by M: Mean, SP: standard deviation; Sig: significant

Qualitative data collection by personal notes also indicated that the respondents believed they have changed on ATE, ecopsychological and spiritual values. In describing the way in

which they believed they have changed on affective AFA, ecopsychological and spiritual values are explained by themes like, 1) Refreshed back their awareness of their responsibility given by Super Force to take care the environments, 2) Questioning themselves on what they have done in their daily life, 3) More sensitive in using electricity and water usage economically, separating wet and dry waste, putting environmental elements while shopping, 4) Saying thank you while using resources from natures.

Some personal notes from respondents described:

*“For me, even though not 100% changed but I believed there is a changed in my daily life...for example I used less plastic bag, polisterina packaging and I tried to separated dry and wet waste. For me, the whole class is interesting..the best thing is its reflect me about my responsibility given by God espeacially to take care the environment which always forgetting by us and to proved our appreciation to what God have gives us“ (PRP010, personal notes)*

This finding also shows that the respondent felt refreshed back their psychological such as emotions, sympathetic, interconnectedness with natures or others. Actually, this is the perception of healing physical, emotional and spiritual. Personal notes from PRP010 showed that they experienced affective attitudes changed, psychological and spiritual renewal.

## CONCLUSION AND RECOMMENDATION

The results indicated that inception of ecopsychology elements in EE did significantly promotes ATE (environmental sensitivity), ecopsychological values (interconnectedness with natures) and spiritual values. The research finding indicated that inception of ecopsychology elements can slightly strengthen EE as part of crucial elements in promoting commitment to take positive actions on environments. The most important is to build inner self motivation to take action and serves the responsibility given by super force to take cares the natures by go through PCZ. Existing EE teaching and learning activities should be incepted with ecopsychology elements to strengthen or nurturing the inner toward natures. Recents research finding showed that ecopsychology also concerned with fostering an awareness of an intimate and profoundly symbiotic relationship with the environment and how this affects us psychologically, individually and globally (Miranda 2007; Canty 2007; Jagel 2007; Fisher 1999; Fenwick 1998; Roszak et al. 1995; Roszak 1992).

These findings tried to reflect to Environmental Education teaching and learning model by injected inner self toward environments and PCZ zone. In order to strengthen commitment to take action, this finding suggesting that concentration should be given to three aspect which are put psyche back into natures and vice versa, interconnectedness relationship with natures and assumed natures as self, family and siblings; awareness that separation both will make both suffering without denying existed model. This three aspect are important to go through the Psyche Cleaning Zone. Spiritual values are needed to strengthen our feeling that we are answerable to Super Force that we must try to secure divine pleasure that our actions must be in accordance with Super Force’s laws. This will make us always careful with what we did, and aware with our responsibility to work or do something to fulfilled responsibility given by Super Force.

Besides that, this finding will help Teachers Training Division (*Bahagian Pendidikan Guru*) to review existed syllabus by putting ecopsychological aspect in the topics. This finding also can help BPG to review and enhanced Environmental Education teaching and learning activities either in the classroom or outdoor. Automatically, this finding enhanced lecturer’s guidelines in Environmental Education teaching and learning activities. This finding also enhanced research and knowledge in Environmental Education. Besides that, these research helping teacher trainees to strengthen their inner self toward environments and by enhancing their inner self toward environments, hopefully they will be more committed to act more

environmental friendly in their daily life or integrated Environmental Education in their subject or co-curriculum activities in school.

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