

Developing Instructional Package about ESD in Order to Increase Knowledge Teacher SLB about ESD (Education for Sustainable Development)

1st Irah Kasirah
Post Graduated Program
State University of Jakarta
Jakarta, Indonesia
irahkasirah66@gmail.com

2nd Nadiroh
Post Graduated Program
State University of Jakarta
Jakarta, Indonesia
nadiroh@unj.ac.id

3rd Hafid Abbas
Post Graduated Program
State University of Jakarta
Jakarta, Indonesia
hafidabbas@yahoo.com

Abstract— This study aims to Determine Whether the instructional package can be effective in improving the knowledge of SLB teachers on ESD. R & D has been selected by involving 70 teachers in the city of Jakarta as a randomly selected sample. There are two groups that have been determined, one group is a group of teachers who have read instructional packages and other groups of teachers as a control group. The teacher's knowledge has been tested by developing a true-false test (36 items and only 28 valid items with the reliability of 0.90). Data have been Analyzed using descriptive statistics and t-test to verify product differences and effectiveness. The results show that there is an Increase in the knowledge of teachers that are effective and significantly after they know the learning package. Therefore, despite Reviews their teacher status, they have a serious interest in reading and understanding the instructional packages as a product. This is one way to change teachers' knowledge and expect changes in their attitudes toward the environment that will Ultimately be more positive.

Keywords—The Instructional Package, Knowledge, Education for Sustainable Development

I. INTRODUCTION

In order to improve human resources, education occupies a very strategic position. The quality and quantity of existing education will determine the availability of human resources. Quality human resources, will only be born from quality education. Through human education, efforts are made to transform human attitudes toward environmental issues. School is one of the means of learning that becomes the main factor in creating an effective education system, through the environment is expected learners can create the learning process optimally because the natural environment is a source of learning that can provide information directly to learners so it is expected to develop the ability of learners optimal.

Education is an educational process, which is a process in order to influence learners to be able to adjust themselves as well as possible with the environment so that will cause changes in him.

Education is a future asset in shaping quality human resources. Increased human resources need to be handled by a good education system, potential managers of qualified teachers and adequate learning facilities. Quality human resources determine the success or failure of development.

Data obtained from SLB Budi Daya that self-reliance learning carried out by teacher of field study and teacher make program of Independence learning in the form of RPP. However, the RPP has not been integrated into the values of ESD (Education for Sustainable Development) because the teachers do not understand the concept of ESD. SLB Budi Daya organizes self-reliance learning by implementing vocational skills skillswithinsight ESD that are economic values, socio-cultural values and environmental values such as the skill of making a doormat from the rest of the patchwork and the skill of making salted eggs while other types of skills have economic and social value just like cooking skills, sewing skills such as pillowcases, tablecloths, and other types of skills.

Knowledge is defined as a reminder of the material that has been learned, the revelation of specific facts into something complete so as to create a thought about the complete information. This knowledge is a low level of learning outcomes in the cognitive domain.

According to Lazarus, knowledge refers to the understanding of an object and its role in general as in a specific context.[1] so that the results of human knowledge can utilize an object in detail according to the usefulness of its life.

According to Bloom, knowledge is a special memory and a common memory of various methods and processes or memories of patterns, structures and circumstances.[2] Taxonomy Bloom classifies 6 levels from the lowest to the highest levels of knowledge, understanding, application analysis, synthesis and evaluation. Taxonomy Bloom is rejected by cognitive psychology, curriculum experts, instructors, and intructional researchers. The reason is that learning essentially what learner know (knowledge) and how they think (cognitive process). Taxonomic rejection consists of two dimensions: knowledge dimension and the cognitive process dimension. Knowledge dimension consists of 4 types: 1. Factual, 2. Conceptual, 3. Procedural, and 4. Metacognitive. Dimensions of the cognitive process consists of six categories: 1.knowledge, 2.understanding, 3.application, 4.analysis, 5.evaluation and 6.creation.[3] which states that knowledge includes the appearance of situations that emphasize the remembered, one of them

through the recognition or recall of ideas, objects or phenomena.

Development not only has a positive impact on reducing the gap, but also negatively impacts the exploitation of natural resources and environmental degradation. The concept of sustainable development is considered as an answer to overcome the negative impact of development. This concept has been around since the 80s as a response to economic and social challenges, paying attention to the environment and conservation of natural resources (UNESCO, 2011).[4] so that sustainable development becomes an important issue and can special attention from the world as a solution to problem solving.

Education can accelerate sustainable development, because through this way perceptions, attitudes and attitudes will change. The concept of Education for Sustainable Development (ESD) or Education for Sustainable Development (PPB) emerged as an answer to achieve the intended development. This concept involves all parties globally to contribute and change for the better. In particular, the United Nations (UN) emphasizes that MARPs must be implemented by involving governments, the United Nations Educational, Scientific and Cultural Organization (UNESCO), communities, the private sector, formal education institutions, civil society, media, and international organizations (DESD, 2012).[5]

The following are some definitions of some experts, the most commonly used definition of sustainable development proposed by the Brundtland Commission. This broad definition, to be used in this dissertation, does not limit the scope of sustainability. That explanation, however, touches on the importance of generational equations.[6] This concept of conserving resources for future generations is one of the key features that distinguishes sustainable development policies from traditional environmental policies, which also seek to internalize the environmental externalities of degradation.

The model is basically a representation or formalization in a particular (agreed upon) language of a real system. As stated by Robbins and Judge, "A model is an abstraction of reality; a simplified representation of some real-world phenomenon." [7] That is, the model is a representation of some phenomena that exist in the real world. The real system is the system that is going on in life, the system used as a point of concern and disputed. Thus, modeling is the process of building or forming a model of a real system in a certain formal language. The model is a visualization or conceptual framework used as a guide in conducting activities.

Similar opinions were expressed by Richey, Klein, and Tracey, "The model implies a representation of reality presented with a degree of structure and order, and models are typically idealized and simplified views of reality." [8].

According to Gagne and Briggs, "The model is a set of successive procedures, the media selection, and evaluation." [9] Similar opinions were expressed by Ford as follows:

A model can come in many shapes , sizes, and styles. It is important to emphasize that a model is not a real world construct to help us understand real world systems. In general all models have an information input, an information processor, and an output of expected results.[10]

In connection with the development of the model, Whipple et al, stated, "The model development involves the definition of a model objectives, conceptualization of the problem, translation into a computational model and the model testing, revision, and application." [11] That , model development involves defining model goals, conceptualizing problems, translating into computational models, and testing models, revisions, and applications.

According to Shafique and Mahmood, "The development is considered an effective research method. It assists investigators and scientists in relating more accurately to reality; it also aids them to describe, predict, test or understand complex systems or events." [12] That is, model development is considered an effective research method. This helps researchers and scientists connect the results of research with reality more accurately; it also helps them in describing, predicting, testing or understanding complex systems or events. Based on the above description it can be synthesized that model development is an extension of the application of a model intended to help describe, predict, test or understand complex systems or events.

The terms of instructional systems development and instructional design are often considered to be the same, or at least not clearly differentiated in their use, although in the sense that there is a difference between "design" and "development". The word "design" means "sketch or pattern or outline or preliminary plan". While "developing" means "making it grow regularly to make things bigger, better, more effective, and so on." Some definitions show the similarities between the two.

According to Gerlach and Ely, "Instructional system development is a process in a systematic and logical to study the problems of teaching, in order to get a solution that is proven validity, and could practically be implemented." [13].

Dick, Carey, and Carey stated, "Instructional strategies are not only limited to activities ", but also includes" material or teaching package." [14] Furthermore, Dick, Carey, & Carey mentions the existence of five components of instructional strategies: "(1) The preliminary instructional activities: (2) Submission of information; (3) Participation of learners; (4) Tests; and (5) Follow-up activities." Further may be described as follows: (1) Preliminary Instructional Activities. Preliminary activities are intended to attract interest or increase the motivation of learners to the material to be studied. For adult learners, this motivation problem is not as important as immature learners. Because, adult learners are considered to have realized their own obligations to learn. But for immature learners, some techniques need to be used to encourage their motivation. (2) Submission of

information. This activity is usually seen as the only teaching activity. When in fact only one component of the overall teaching and learning activities. (3) Participation of learners. The learning process will be more successful when learners are given practice and exercises relevant that are directly related to the objectives. (4) The test. After learners are told the purpose of learning something, to be informed of the material learned, given the exercises to have the knowledge and skills as intended. (6) Further activities, after testing, of course there are learners who managed well, some are failing. What treatment will be given to them as follow up? Treatment may be the provision of repair program for the failed and enrichment for that work.

Learning design is an overall process of needs and learning objectives and delivery system. These include the development of materials and learning activities, testing and assessment of materials, as well as the implementation of instructional activities. To understand more about the theory and application of instructional design. There are models of instructional design using certain approaches with Dick and Carey Model.

Instructional design was developed by Walter Dick, Lou Carey, and James O. Carey. According to this approach there are several components that will be passed in the development and design process in the form of a sequence of steps. The sequence of these steps is not rigid. But as Dick & Carey pointed out, there have been a lot of device developers following the sequence continuously and successfully developing effective tools. Dick & Carey sort out the ten stages in designing instructional as follows:

- 1) Stage 1: Identify the objective (Identify Instructional Goals)
- 2) Stage 2: Construct an instructional analysis (Conduct Instructional Analysis)
- 3) Stage 3: (Identify Entry Behaviors and Learner Characteristics)
- 4) Stage 4: Write job goals (Write Performance Objectives)
- 5) Stage 5: Develop criteria of test items (Develop Criterion-Referenced Test Items)
- 6) Stage 6: Revise instruction
- 7) Stage 7: Develop Instructional Strategy
- 8) Stage 8: Develop and selecting teaching materials (Develop and Select Instructional Materials)
- 9) Stage 9: Develop and conduct formative evaluation
- 10) Stage 10: Develop and conduct summative evaluation [5]

With regard to the developmental education package model developed, the subject matter of the instructional package includes understanding, perspectives, components and aspects of sustainable development education, sustainable development education dimension, sustainable development education objectives contained in the books PPPB 1, PPPB 2 and PPPB 3. As for each explanation as follows:

- 1) PPPB 1. Understanding of sustainable development; understanding, perspectives, components and aspects of sustainable development education.
- 2) PPPB 2. the dimension of sustainable development education that is social, economic, and political dimension.
- 3) PPPB 3. sustainable development education goals.

II. METHOD

This research is R & D based on Borg and Gall (2003), while material development strategy refers to instructional design comes from Dick and Carey's model (1996). This study was followed by the development of the effectiveness test model of teacher learning package about ESD through treatment method, with pre group design & post control. There are about 70 teachers selected as simple random sampling samples. Tools for measuring knowledge about ESD have been developed by applying true-false tests (36 items and valid 28 items with reliability of 0.90).

There are two groups, one treatment group consisting of a group of teachers who must read the learning package and another group of teachers who do not necessarily have to read the pack as a control group. Data have been analyzed by applying descriptive statistics and t-test to verify product differences and effectiveness.

This treatment is done to determine the effectiveness of the instructional package on ESD using design methods of treatment before the test - after the control group test. The design of this treatment are as follows.

$$\begin{array}{ccc} O & X & O \\ O & C & O \end{array}$$

Information:

X = class treatments, using the Instructional Package ESD
C = class Control / controls, without using Package Instructional ESD
O = Observation

III. RESULTS AND DISCUSSION

In developing an instructional package that contains information about the teacher's knowledge of ESD to involve teachers to learn active in building knowledge through the principles and characteristics of problem-based learning. Material development not only emphasize the sense of mastery, but changing the attitude, mindset and behavior of teachers to be more concerned about ESD, and be able to apply the principles of environmental sustainability. In this case the teacher is directed to understand ESD and its impact on the environment by introducing environmental conditions, observed problems and environmental issues, as well as the right tackle the environmental problems that exist and that may occur.

Results *t* test teachers knowledge on ESD between scores *posttest control group* (gainscore) obtained by $t = 21,71 > t_{table} = 1.98$ at $\alpha = 0.05$.. So H_0 is rejected, which means that there is a difference between the control group treatment, That is a very significant difference between

the score of the teacher's knowledge of *ESD* to teachers by the learning package for those who were not given, in which the score pre-test post-treatment of 22.11 higher than those not given the knowledge of learning package *ESD* who scored 18.14 pre- post-control.

This package is designed as a product that is read by the teacher with regard to *ESD* in the text book model based on objective environmental education and take advantage of the biophysical environment, socio-cultural and learning resources. Describe instructional design package knowledge and learning activities *ESD* in approach concepts, *ESD* starting with exploration activities of environmental phenomena, collecting information about *ESD*, and develop the ability to solve issues relating to the environment. It helps people to gain understanding and knowledge of *ESD* to teachers that they learn for later, especially environmental problems.

Step knowledge teachers learn about package *ESD* presented in this study will be an integral part of the method of this invention. The method was developed from theoretical discovery learning Bruner, believe that learning is the knowledge discovery process conducted actively and systematically. Inventive process leads people to satisfy curiosity and encouraged to seek information from various sources. Through this process the teacher can find answers themselves and are able to make conclusions and to communicate it.

IV. CONCLUSION

1. The development of Knowledge Packs *ESD* are designed based on the design of the learning model based on objective environmental education and material analysis on *ESD*. The substance developed material tailored to the level of development of the citizens. While environmental conditions and environmental. Phenomena serve as a source of learning. learning packages *ESD* Framework consist of components that describe the learning activities with the teacher's knowledge of approach, *ESD* which begins with an exploration of environmental phenomena, and explore information about *ESD*, thereby increasing teachers' knowledge on *ESD*.

2. Package Knowledge Learning Model of *ESD* developed as effective in improving teachers' knowledge on *ESD*.

REFERENCES

- [1] Deoblong B. Van Dalen, Understanding Educational Research An Introduction, New York: McGraw-Hill Book Company, 1979.
- [2] Richard S. Lazarus, Emotion and adoption, a New York: Oxford University Press, 1991.
- [3] Benjamin S. Bloom (ed), Taxonomy of Educational Objectives Of Book I Cognitive Domain New York: Longman Inc., 1981.
- [4] in Michelle Roger Anderson, Fischer USDLA Distance Learning School Education, Vol 6, Issue 4, 2008. P. 62
- [5] UNESCO. 2011. Education For Sustainable Development Information Brief, http://www.rnmb.ca/wpcontent/uploads/2011/11/esd_info_brief.pdf, accessed on 8 September 2016
- [6] DESD. 2012. About Education for Sustainable Development, <http://www.desd.org/About%20ESD.htm>, accessed August 14, 2016.
- [7] Dernbach, JC (2013). Achieving sustainable development: The centrality and Multiple Facets of integrated decision-making. Indiana Journal of Global Legal Studies, 247-285.
Rita C. Richey, James D. Klein, and Monica W. Tracey, The Instructional Design Knowledge Base: Theory, Research, and Practice, New York: Routledge, 2011.
- [8] Gagne, Robert M. & Leslie J. Briggs, Principles of Instructional Design. 2nd Ed. New York: Holt Rinehart & Winston, 1998.
- [9] Andrew Ford, Modeling The Environment. 2nd edition, Washington DC Island Press, 2009.
- [10] Chris Whipple et al., Models in Environmental Regulatory Decision Making, Washington DC: The National Academies Press, 2007.
- [11] Farzana Shafique & Khalid Mahmood, "Model Development as a Research Tool: An Example of PAK-Nicene," Library Philosophy and Practice 2010 ISSN 1522-0222, p. 5.
- [12] Vernon S. Gerlach & Donald P. Ely, Teaching & Media: A Systematic Approach. Second edition, Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1990.
- [13] Walter Dick, Lou Carey, and James O. Carey. The Systematic Design of Instruction, New Jersey: Pearson Education, 2009.
- [14] Vernon S. Gerlach & Donald P. Ely, Teaching & Media: A Systematic Approach. Second edition, Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1990.
- [15] Walter Dick, Lou Carey, and James O. Carey, The Systematic Design of Instruction, New Jersey: Pearson Education, 2009.