

Paradigm of Environmental Teachers at Public High Schools in the City of Makassar

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Abstract—The purpose of this study was to analyze the relationship between the naturalist intelligence, locus of control, and knowledge of the ecosystem with the environmental paradigm. The paradigm of the teacher on the environment is needed to be held for teachers when teaching subjects and needed to be practiced in biology class in high school. This study used a survey method. The samples in this study were 95 teachers who were drawn randomly. Data were collected through participant observation using the instrument in the form of questions and statements. Analysis and interpretation of the data showed that (1). There is a positive relationship between the level of naturalist intelligence with the environmental paradigm. (2) There is a positive relationship between locus of control with the environmental paradigm. (3) There is a positive relationship between knowledge of ecosystems to the environmental paradigm. (4) There is a positive relationship between the naturalist intelligence, locus of control and knowledge of the ecosystem, together with the environmental paradigm. The findings of this study concluded that with the increase naturalist intelligence, the locus of monitoring and knowledge of ecosystem, the biology teacher collaboration, and the environmental paradigm would improve.

Keywords—*naturalist intelligence; locus of control; knowledge about the ecosystem and the paradigm environment.*

I. INTRODUCTION

Biology teachers, typically referred to as science teachers, are highly skilled in the sciences, specifically biology. A Biology teacher will have to have an in-depth knowledge of the subject to be able to answer questions from students and teach content contained in school standard [1]. As biology teacher who frequently teaches on living organisms (flora and fauna), they are expected to have a naturalist intelligence, internal locus of control and knowledge of the ecosystem.

Furthermore, the naturalist has all environmental skills include all the survival skills that relate to the world [2]. A naturalist can classify and use terms associated with plants, animals, body parts, and natural materials. Internal locus of control held by teachers of biology is the recognition of teachers so that they can take control over himself. Rotter in Shane stated that the locus of scrutiny is a person's belief in which he can affect the environment of its existence [3]. Moreover, the locus of scrutiny is on a continuum between an external and internal belief over who has control of a person's destiny [4]. Likewise, the locus of monitoring has two dimensions which are the internal locus of control and external

locus of control [5]. Internal and external locus of control represents a continuum along with which people can be placed having low, moderate or high internal-external locus of control. Biology teacher as educators is expected to have knowledge of the ecosystem so that knowledge can be applied to save the environment. It can also be used to reduce environmental damage. Knowledge of a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information [6].

An ecosystem as the whole system (in the sense of physics), including not only the organism-complex but also the entire complex of physical factors forming what we call the environment of the biome the habitat factors [7]. It is the systems from the ecologist perspective, are the core units of nature on the face of the earth. Dash further stated that the ecosystem comprises the biotic community and the non-living environment, It is the basic functional unit including both the organism and its environment. Each will influence the properties of the other organism, and it will be needed for the survival and maintenance of life [8].

In complying with the rules to preserve the environment, biology teachers are expected to have a good environmental paradigm. A paradigm may be view as a set of core beliefs (or metaphysics) that deals with ultimate or first principle [9].

II. RESEARCH METHOD

The method used in this research is a survey with the correlational approach. It was conducted by using test instruments, and questionnaires. The sampling used purposive sampling and simple random sampling. Samples are 95 teachers of biology [10]. The research variables consisted of three independent variables; naturalist intelligence (X1), the locus of control (X2), and knowledge of the ecosystem (X3), and the dependent variable is the paradigm of the environment (Y).

First test data analysis requirements as follows: 1) test the validity and reliability of the instrument [11], 2) test standard error [12], 3) check the normality of the data [13] and 4) test of homogeneity [14]. Both tests hypotheses as follows: 1) the calculation of regression analysis [15], 2) linearity test and the significance of the regression of Y on X [16], 3) the correlation coefficient used product moment and the significance test of correlation coefficient between X and Y,

and 4) a partial correlation and significance test partial correlation between X and Y.

III. RESULT AND DISCUSSION

The first hypothesis testing showed that there was a positive and significant relationship between the naturalist with the environmental paradigm. The shape of the positive correlation is shown in $r_{x_1y} = 0.748$, due to the positive correlation coefficient. The strength of the relationship of 0.748 with a coefficient of determination $r^2_{x_1y} = 0.560$. It can be said that the variable naturalist intelligence can explain 56.0% of the variable environmental paradigm. The pattern of the relationship between X_1 and Y can be expressed by the regression equation $\hat{Y} = 139.947 + 0.729X_1$.

This equation gives information that any change of the unit score naturalist followed by a change of environment paradigms score (Y) amounted to 0.729. Every increase in one unit naturalist, then the average will increase the environmental paradigm (Y) amounted to 0.729. The partial correlation coefficient between the naturalist intelligence (X_1) with environmental paradigm (Y) by controlling influence (X_2 and X_3) is equal to 0.349. The correlation coefficient between the naturalist is a fundamental environmental paradigm. These results indicate that biology teachers tend to have a naturalist intelligence.

The naturalist intelligence can significantly add to the environmental paradigm of teachers in solving environmental problems which are in this case showed a high number. The second hypothesis test showed that there is a positive and significant relationship between locus of control with the environmental paradigm. The shape of the positive relationship is shown in $r^2_{x_2y} = 0.702$, due to the positive correlation coefficient; it can be said that the better locus of control teacher paradigm represents better environment by the strength of the relationship of 0.702 with a coefficient of determination $r^2_{x_2y} = 0.493$. It can be said that 49.3% of the environmental paradigm variable (Y) can be explained by the variable locus of control (X_2). The pattern of the relationship between the two variable (X_2 and Y) can be expressed by the regression equation $\hat{Y} = 140.11 + 0.999 X_2$. This equation gives information that any change of the unit score locus of control followed by a change of environment paradigms score (Y) amounted to 0.999. In other words, every increase of one unit in the locus of control, then the average will increase the environmental paradigm (Y) by 0.999.

The partial correlation coefficient between locus of control (X_2) with environmental paradigm (Y) by controlling influence (X_1 and X_3) obtained at 0.355. The correlation coefficient between locus of control with the otherwise give very significant environmental paradigm. These results indicate that biology teachers tend to have an internal locus of control that has a high self-confidence and being able to control nor desirable to control everything, which happened in his life.

The third hypothesis testing showed that there was a positive and significant relationship between knowledge of ecosystems with the environmental paradigm. The shape of the positive relationship was shown in $r_{x_3y} = 0.734$ because of

the correlation coefficient positive. The better understanding of ecosystem teachers, the more and better the environment paradigms teachers with the power relations of 0.734 with a coefficient of determination $r^2_{x_3y} = 0.539$.

The value means that 53.9% of the environmental paradigm variable (Y) can be explained by the variable knowledge about the ecosystem (X_3). The knowledge about the ecosystem contributed about 53.9% of the environmental paradigm. The regression equation can express the pattern of the relationship between the two variable (X_3 and Y) $\hat{Y} = 139.695 + 0.753X_3$. This equation gives information that any change of the unit score of knowledge about the ecosystem followed by environmental paradigm change score (Y) by 0.753. In other words, every increase of one unit of knowledge about the ecosystem, then the average will increase the environmental paradigm (Y) by 0.753. The partial correlation coefficient between the awareness of the ecosystem (X_3) with environmental paradigm (Y) by controlling influence (X_1 and X_2) obtained for 0.312. It can be said that the correlation coefficient between the knowledge of ecosystems by environmental paradigm was significant.

These results indicate that teachers tend to have knowledge about the biology of ecosystems that can significantly add to the environmental paradigm of teachers in solving environmental problems. Specifically, knowledge about the ecosystem of a teacher will be the basis of the attitude which will further shape the behavior of teachers.

The fourth hypothesis testing showed that there was a positive and significant relationship between the naturalist intelligence, locus of control and knowledge of ecosystems with the environmental paradigm. Forms of the positive relationship shown in $R^2_{y.123} = 0.821$. It can be said that the correlation between the naturalist intelligence (X_1), the locus of control (X_2) and knowledge of the ecosystem (X_3), together with the significant environmental paradigm. Due to the positive correlation coefficient, the better naturalist, locus of control and knowledge about the ecosystem, the better environmental paradigm of teachers with the power relations of 0.821, with a coefficient of determination $R^2_{y.123} = 0.674$. It can be said that 67.4% of the environmental paradigm variable (Y) can be explained by naturalistic intelligence variable (X_1), the locus of control (X_2) and knowledge of the ecosystem (X_3). The pattern of the relationship between the four variables (X_1 , X_2 , X_3 and Y) can be expressed by the regression equation $\hat{Y} = 135.543 + 0.323 X_1 + 0.430X_2 + 0.299X_3$.

This equation gives the information that the regression coefficient of 0.323 X_1 provides information that every change of one unit score naturalist intelligence (X_1), followed by environmental paradigm change score (Y) of 0.323. In other words, every increase of one unit of naturalist intelligence (X_1) will increase the environmental paradigm (Y) of 0.323.

The regression coefficient of 0.430 X_2 provides information that every change of one unit score locus of control (X_2), followed by environmental paradigm change score (Y) of 0.430. In other words, every increase of one unit in the locus of control (X_2), it will increase the environmental paradigm (Y) of 0.430. Furthermore, the regression coefficient

of 0.299 X_3 provides information that every change of one unit score of knowledge about the ecosystem (X_3), followed by environmental paradigm change score (Y) amounted to 0.299. In other words, every increase of one unit of knowledge about the ecosystem (X_3) will increase the environmental paradigm (Y) amounted to 0.299. Based on the above, naturalistic intelligence has the highest contribution to the environmental paradigm followed by knowledge about the ecosystem and the final locus of control.

IV. CONCLUSIONS

With the above results, it can be concluded that the higher the naturalist, the higher the paradigm neighborhood high school teachers field of biology. The higher the locus of control, the higher the paradigm neighborhood high school teachers field of biology. The higher the knowledge about the ecosystem, the higher the paradigm neighborhood high school teachers field of biology. The higher the naturalist intelligence, the locus of control and knowledge about the ecosystem together, the higher the paradigm neighborhood high school teachers field of biology.

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