

## **Teaching strategies development for improvement an environmental sustainability consciousness: based on different personality traits of students**

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### **Abstract**

The purpose of this study is to develop teaching strategies based on different personality traits of students. Through these teaching strategies, to ensure the students of different personality traits develop environmental sustainability conscious under learning process. In the methodology, this study first develops a complete teaching model, and use Partial Least Squares regression (PLS) to verify for the teaching model; in the second, use taxonomy approach to classify and identify for clusters of different personality traits students; finally, combine with teaching model and clusters of different personality traits students, use the PLS to analysis the change of teaching model between different personality traits students, and further identify teaching strategies for students of different personality traits.

**Key words:** Teaching strategy, sustainability, personality traits

### **Introduction**

The economic growth usually needs to depend on large manufacturing industry to support. However, with a serious greenhouse-gas and industrial wastewater emission under production process also come industrial pollution, it further causes the global warming. For this reason, improvement of environmental sustainability become a translation in recently.

Concept of environmental sustainability can follow the [1]. Even though, peoples should have consciousness no matter what life or work if the environmental sustainability hope to be successfully improved. For this reason, establishing an environmental sustainability consciousness between peoples is priority.

To establish the environmental sustainability consciousness, the learning process under college is a critical. Related researchers such as [2] indicated that, due to the college's students have a complete and mature mind, therefore, they can understand to the concept of environmental sustainability. They will discuss, and further establish a consciousness. Based on the consciousness, they will bring the consciousness into life even future work.

Even though, a mature mind also has an ability of independent thinking. More importantly, their personality traits have finished development, and the personality traits also have influence on degree of independent thinking [3]. Some personality trait as openness may have nature of positive thinking and have the courage to express their opinions even try to influence to other peoples; some students of passive attitude

maybe has no original opinions, and always be a follower. Therefore, if students who has a progressive and opinion-maker and believe the economics growth is more important than environmental sustainability, they may guide a consciousness establishment as resisting the environmental sustainability. In this time, faculty of college how has duty to guide students of different personality traits to develop a consciousness for improvement of environmental sustainability.

For this reason, the purpose of this study is to develop different teaching strategies based on different personality traits to improvement an environmental sustainability consciousness establishment.

### **Literature review**

#### *A. Environmental sustainability consciousness*

According to [4-5], the term raising environmental sustainability consciousness is a complex construct.

However, why the establishment of environmental sustainability consciousness is important to improvement of environmental sustainability? [6-7] indicated that, consciousness usually has a positive effect on people's sustainable behavior. Therefore, establishment of consciousness usually be deemed as a priority if the environmental sustainability wants to be successfully improved.

To establish an environmental sustainability consciousness, more researchers believed that the instructed process is critical. Existing studies usually identify two directions to further explore. First direction is timing, more researchers such as [8-9] believed that the establishment of consciousness should begin from children education stage; second direction is teaching approach of teacher, such as [10] indicated that the teacher's environmental consciousness has positive effect on establishment of student's consciousness. Or such as [11] pointed out the importance of teaching approach.

Even though, existing studies lack to consider the student mind will affect their degree of cognitive and understanding. Especially the children, they just receive information, but they cannot think why we need to improve the environmental sustainability. Thus, the effect is limited on establishment of consciousness on children education stage. In addition, existing studies also lack to consider for different personality traits of students. Actually, a single teaching approach is difficult to influence cognitive change of different personality traits students. Exactly, they need diversity teaching approach when meet students of different personality traits.

### *B. Personality traits*

Theory of personality developing has a long term history. According to America Psychology Association (APA), different conditions in the life will affect people's psychology developing, and lead to different personality. [12] indicated that, different personality traits usually trig different behavior, responding, thinking, or cognitive, therefore, the personality traits in more research fields such as business management, organizational behavior, human resource management, and social science usually be deemed as an importance issue.

To explore the influence of different personality traits and further apply on different research fields, more researchers tried to define for types of personality. For example, [13] tried to define for five type personalities for childhood and adolescence; [14] defined different personality traits for entrepreneurial personality.

Although researchers defined for different personality traits based on different conditions, with the big five personality scale was developed and further define as five types of personality, majority researchers usually explored the influence of different personality traits based on big five. According to [15], five personality traits are included to experience are mainly dimensions in personality traits. With the big five scale developed these five personality traits, more and more researchers such as [16-17] began to use these five personality traits to explore related research issue. And majority researchers agree the fairness of these five personality traits, therefore, today's researchers almost use these five personality traits to measure and further explore for related research issue. Based on big five scale, this study also adopt the big five scale to measure and classify for students' personality traits.

## **Methodology**

### *A. Teaching strategies model*

According to research purpose, this study is to develop teaching strategies for students of different personality traits. We hope to know which teaching strategy is suitable for which personality student and further ensure they can develop an environmental sustainability consciousness. Based on above, develop a teaching model of environmental sustainability education is priority.

### *B. PLS*

According to the teaching model of environmental sustainability consciousness, we further develop an investigative questionnaire, and use the questionnaire to investigate to faculty of higher education institution. Finally, finish the data collection.

In the analysis of PLS, to ensure the normality of analysis data, we first analyze for data normality through mean, standard deviation, variance, skewness and kurtosis. The statistical coefficient of skewness should be between 1 to -1, and kurtosis should be between 3 to -3. After, we should test for reliability and construct validity through Cronbach  $\alpha$ , factor loading, C.R. and AVE. When we make sure the reliability and construction satisfy the requirements of statistic analysis, we further test the teaching model through PLS. According to the analysis results of PLS, finish the development of teaching model.

### *C. Taxonomy and PLS*

According to the teaching model of environmental sustainability consciousness, this study further combines with the big five scale to develop an questionnaire and investigate to college's student. After finishing the data collection, this study will use item of big five scale to classify for students of different personality traits. About the classification approach, we will use the taxonomy.

Concept of taxonomy is based on statistical cluster analysis. In the early, this approach was used on species classification. Due to its effect on classification, related research issues such as classification of strategy, group, and characteristic usually adopted the approach.

In the analysis process, taxonomy approach adopts the two stages cluster analysis. First, ward's method and squared Euclidean distance are adopted for hierarchical clustering. According to analysis result of hierarchical clustering, the dendrogram and an agglomeration schedule table will be generated, and help us to decide for number of cluster. Actually, these number of cluster means how many types of personality traits can be identified from samples. In the second, use K-mean cluster analysis to distinguish all of the samplings into different clusters. Third, use ANOVA to test the difference between clusters. Finally, explore for composition of five personality traits, and further identify for every cluster, to understand the personality traits focus of every cluster.

Based on different clusters, further analyze the teaching model through PLS. According to the analysis results, we will find out that different path analysis results will be generated. Based on above, we can further identify different teaching strategies for students of different personality traits.

## **Conclusion**

This study is a research proposal, and we try to explain for the research concept and research process. If the research can be realized and further identify different teaching strategies for students of different personality traits, we can ensure that every student will has consciousness on environmental sustainability improvement. Therefore, it has a positive effect on environmental education practice. In the future research, we will develop teaching model and try to verify, and further identify teaching strategies based on different personality traits to effective establish an environmental sustainability consciousness.

## **Acknowledgement**

This work was supported by the National Natural Science Foundation of China (NSFC) under Grant 71872131.

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