

## A Facilitating Effective Teaching through Learning Based on Learning Styles and Ways of Thinking

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### Abstract

The study deals with learning styles and ways of thinking in facilitating effective teaching. The objective of this study was to investigate the relationship between students' learning style and ways of thinking toward effective teaching. This study was conducted by using correlational design. The population of the study were 360 university students of English education academic year 2015/2016 in State University of Medan. The samples were 82 university students selected by using random sampling. The data were collected by using questionnaires and tests. The analysis used the techniques of regression and correlation. The finding of this study revealed that F count is higher than F table ( F count =13.67 > F table =3.32 ; the correlation coefficient ( $r_{12}$ ) = 0.57) meaning that there is significant correlation between learning styles and ways of thinking. It indicates that learning styles and ways of thinking contribute to effective teaching.

**Keywords:** effective teaching, learning styles, ways of thinking

## **A. Introduction**

Almost all teachers in Indonesia ignore the students' ways of thinking and learning style. Whereas both aspects are significant to determine the success of learning. Anastas (2012) states that a mismatch in learning style between teacher and student is common in teaching or learning situation. Teachers tend to prefer the styles that come most easily to them. Meanwhile, the students are challenged to be able to use various learning styles adapt to a variety of contexts and situations they will encounter. To solve this problem, teachers should pay attention to students' ways of thinking and learning style.

Knowing the ways of thinking and learning styles make the teachers easy to determine the appropriate technique to be applied in teaching learning process. Research shows that if teachers can give students instructions relevant to their learning styles, the performances are usually better (Dunn and Price, 1979; O'Brien, 1989; Ehrman and Oxford, 1993). It evidently indicates that learning styles correlate with the learning strategies.

The fact that many teachers use a certain technique to whole classrooms make condition is not conducive for students who have various learning styles. However, it is also complicated if a teacher should apply various teaching techniques in a teaching learning process. Actually a teaching technique can be used if the teachers know the concept of teaching. For instance, technique of demonstration can be applied for teaching students who have visual, auditory and also kinesthetic learning styles.

As well learning style, the teacher should know the students' way of thinking because it also affect the students' way of absorbing the lesson. As O'Brien (1991) on his study reported that an abstract sequential style was associated with higher degrees of academic success in college. It means that ways of thinking also contribute to effective teaching. Therefore, the teacher should be attentive to both aspects. This study aims at investigating the relationship between students' learning style and ways of thinking toward effective teaching.

## **B. Literature Review**

### **1. Learning Styles**

Style is defined as the consistency and consistent preference in one's self (Brown, 2001). He asserts that style is intellectual characteristic and the types of personality that distinguishes one's self from others. This style is changing based on the context. If cognition is directly related to the educational context, where the affective and psychological factors are mutually intertwined, it is called with learning style.

Learning style is considered as the nature of the cognitive, affective and psychological which becomes an indicator of how students sense, interact with and respond to the learning environment (Keefe, 1979 as quoted Brown, 2001). Simply, Skehan (1998) states that the learning style is a general trend, either voluntary or not, to inform in a certain way. Meanwhile Gregorc (1979) defined learning style as the distinctive behaviors that indicate how person learns from and adapts to his/her environment. Various studies have been conducted to prove that every individual has different learning styles and ways of thinking. For instance, people will find it more effective when learning by listening. On the other hand, other people think

reading is preferred. Some people believe that they could explicitly gain result if practicing directly. Generally, those learning styles are dubbed Fleming and Mills's VARK model (visual, auditory, reading and kinesthetic).

Each person has different learning style with different ability to absorb lesson. Some are fast learners, the others are very slow learners, and hence he often must traverse a different way to be able to grab lesson or to obtain the same information. Some students prefer writing to listening, and other prefers having discussion. A number of students prefer lecturing. The elderly usually absorb learning style based upon their experience. A series of experience they skipped in the past can be learned by the next generation to see how much appropriate learning style for an individual. Whatever the way is, learning style differences reveals the fastest and the best way for any individual to absorb information. Therefore, no individual fully adopts one learning style. Normally, a combination of one learning style with others will result in intelligence and significantly work. However, the meanings of clever and successful people are the bio cognitive ones that has the flexibility to adapt the style (Brown, 2001). In other words, different contexts will not bring any influences toward the learning process.

## **2. Auditory (listening)**

Auditory learning style relies on the students' ability to understand listening when studying materials. This learning style really puts listening as the main tool to absorb the information or knowledge such as a discussion, a lecture, a debate, or another type of verbal presentation. (De Porter, Reardon and Singer-Nourie, 1999; Nilson, 2010). In other words, to be able to remember and understand certain information, student with this type of learning style must listen to the source of information straight forwardly. Normally, this person is hard to absorb direct information in written form and has difficulties in writing and reading.

Individual with auditory learning style has some features, such as to be able to remember the material well, to know great deal of songs, talk-active, not a good reader and hard to remember what has been read, less in composing/writing, less paying attention to new things in the surrounding environment.

## **3. Visual (Seeing)**

Individual who learn making use of visual learning styles focuses on the sharpness of vision. Concrete evidence must be presented to be displayed. Individuals with visual learning style require a high and constant vision to capture information before they understand it. Visual learners prefers to learn by reading words on a printed page or by looking at illustrations, pictures, diagrams, flowcharts, graphs, concept and mind maps, graphic models and organizers, and graphic metaphors (Gardner, Jewler, Barefoot, 2011; Nilson, 2010). In addition, having high sensitivity towards colors and having sufficient understanding on artistic issue. However, making direct communication is hard since he is much too reactive to the sound, so following oral suggestion and frequently interpreting incorrect words or speech becomes the major issue.

Adapted from Nilson (2010), some characteristics of those who use visual learning style are always paying attention to one's lips of while communicating, using

body language while expressing something, less speaking in front of groups and less listening to other people, hard to remember oral information, demonstration is preferred to oral explanation, to be able to sit quietly in the middle in a crowd.

#### **4. Reading**

Individual with this type of learning style focuses on reading or noting. Reading or writing is in preference to remember particular information. Those who have this type of learning style rely heavily on recognizing logical, deductive relationships, such as the classic outline form, and they can easily find pattern and flow in a well-constructed lecture or textbook. They store information as organized sets of symbols, such as outlines, equations, diagrams, and typologies (Nilson, 2010; Gardner, Jewler, Barefoot, 2011). They usually write and rewrite notes, read notes silently, organize diagrams or flow charts into statements, write imaginary exam questions and respond in writing (Gardner, Jewler, Barefoot, 2011).

#### **5. Kinesthetic (Touching)**

Person who has a kinesthetic learning style usually requires other individual's touch as information provider to remember it. The character of this type is fond of using hand as a recipient of a headline to remember (DePorter, Reardon and Singer-Nourie, 1999; Gardner, Jewler, Barefoot, 2011). By holding something, the information is absorbed without reading the explanation. The individual of this type cannot sit well to get information. Instead, the person usually implements a great deal of physical activities, being able to work in a team and being able to control body motion. Individual with learning kinesthetic styles also tends to absorb information easily and understands it by plagiarizing a picture or word, learning to pronounce it or understanding the facts.

People who have kinesthetic learning styles usually love to touch everything they meet, move much, do all things using hands, have a good body coordination, use all your senses in learning : sight, touch, taste, smell, and hearing, learn best from experiential and inductive teaching methods (Gardner, Jewler, Barefoot, 2011; Nilson, 2010). However, studying abstract things are difficult.

As learning style strongly relates to how the brain absorbs information (modalities) and the way it organizes the information. Setting the information relates to the tendency of the brain how to perceive something, in abstract or concrete form. In terms of information, human set it sequentially or randomly. Anthony Gregorc (1982) combines the two factors into 4 character ways of thinking style namely Concrete Sequential (CS), Abstract Random (AR), Abstract Sequential (AS) and Concrete Random (CR). Each person has one dominant thinking style among the four existing types.

#### **6. Modalities**

A variety of educational experts have created different terms of learning style. However, De Porter, Reardon and Singer-Nourie (1999) argue that there are two red lines of learning styles in general. First, the way a person absorbs information easily (how the brain works). It is called modalities. The second is the way people manages such information. The way of absorbing information is reflected

in their learning style, whether by reading, listening, seeing or doing directly. Every individual has different tendency in absorbing information. The combination of two or three learning styles occurs at a particular individual. According to Gardner (1993), learning modalities can be characterized into auditory, visual, and kinesthetic learning style. The different ways of brain works in absorbing information will form different learning styles which then ultimately comes down to the difference in the character of a person. The different characters then will be the main reason for teachers or education providers to design a good learning. In short, the learning modalities are way of how the brain absorbs information coming through the five senses optimally.

### **7. Concret Sequential [CS]**

According to Anthony Gregorc (1979) people who are categorized as this type are those who tend to be regular and neat. They always work on a task on time, be well-planned, do not like anything sudden, dislike delaying something and be perfectionist.

Having a simple way in applying ideas is one of the characteristics of this type. They love and ease to organize. In addition, they typical of people who have brilliant idea to work more efficiently and produce concrete things rather than abstract ideas. They are not only capable of working on time, systematic, procedural, detail, well-scheduled, and logical interpretation as well. This type of people know what fruitful for them. They also like routines and is driven to do something. However, this type can't stand following incomplete or unclear instruction, working with inconsistent person, confronting with abstract ideas, demanding to use his imagination, using wrong question or answer. People who are categorized as this types is fond of asking two things in learning process: (a) what evidences do I need? (b) how do I complete it? and (c) when was it obtained?

### **8. Abstract Sequential [US]**

Anthony Gregorc (1982) states people who are categorized as this type are smart thinker and have brilliant ideas. These people are happy to know and think about what others do not, love reading, love discussing even arguing with others. Their joys sometimes make them forget that the people around them are not familiar with their brilliant ideas.

They are good in terms of collecting a variety of information before making a decision, analyzing the ideas, conducting research, providing logical ideas in sequence, using the evidence to prove or disprove theories, providing the evidence needed to be settled, using the appropriate example as the result of an accurate research, learning more by watching rather than doing, providing acceptable sensible reason, working calmly to discuss an issue thoroughly. However, they have difficulty in doing things such as working in different perspective, having short time in resolving issue, repeating the similar tasks over times, implementing a great deal of rules and other arrangements, having sentimental thinking, expressive, being diplomatic when convincing others, not mastering conversation. People with this type have a number of questions such as (a) how do I know if this is true? (b) is there any possibilities that have not been previously considered (d) what do we required in solving this job?

### **9. Abstract Random [AR]**

Abstract random people are often associated with sensitive people (Gregorc,1982). Sensitive people means often work with feelings and emotions. This type of people work based upon the mood. They feel excited if in the mood, but otherwise, if in bad mood they will no longer have positive emotion toward something. The other characteristics of these people are easy to lose concentration, hesitated, love doodling without meaning in the book, love keeping in touch with others, detest conflict, care with the people around and very easy to be down, tends to approach learning holistically and prefers to learn in an unstructured way. They are also less expressive. (Zhang, Sternberg, Rayner, 2012).

However, the positive characters they have are good listeners, easy to understand other people's feeling and emotional, focus easily on themes and ideas, bring harmony in group, having good relationship with others, knowing and putting respect to other people's emotion. The general characteristics of people with abstract random are prefer studying alone, has broad and general instructions, maintain relationship, have high spirit to participate in work they believe in, have a high morality, take decisions based on feelings. However, they will have difficulty in the following activities, such as provide explanation, compete, collaborate with people with the personality of authority, work in an environment with limitation, working with less-friendly people, concentrate on one thing simultaneously, give the exact details, and receive criticism positively. There are two questions that arise from the abstract random thinking style namely, (a) is it related to me? and (b) how can I differ it?

### **10. Concrete Random [CR]**

Concrete Random people is often regarded as creative people since they love solving problems by their own way. They tend not to care about time. They are also known as the dead liner because they often complete task at the last minute even though they have much spare time. This type of person is multi-task. Due to the emerging ideas in their heads this person can finish tasks at once. Spontaneity and impulsiveness are the special characteristics they have. CR people are usually trusted to be leader though they always raise a critical situation due to the nature of their dead liner. They also love trying something new, conducting experiments as other people from other type do not (Anthony Gregorc, 1982).

People of this type is inspiration to others. They have a lot of options and solutions. Besides, they provide creative ideas. They could not only imagine their future but also use something different in completing something. They are well-accepted people who have a great deal of differences. Thinking fast with his own business and risk-taking exists in this type of person. They also prefer to adopt trial-and-error, intuitive, and independent approaches to learning ( Zhang, Sternberg, Rayner, 2012).

People who have a Concrete Random thinking [CR] will have difficulty in doing the activities such as using insights and instincts to solve the problem and working for long time. They will have difficulty if dealing with the existence of prohibitions and restrictions, formal reports, routine activities, keep detailed documents, show how they get an answer, choose only one answer, no choice. The things they often ask in the learning process is how much is it really required?

### C. Research Methodology

The study was conducted by using correlational design. The population of the study were 360 university students of English education academic year 2015/2016 in State University of Medan. The samples were selected by using random sampling with 82 university students. There were two instruments used during the investigation, they are questionnaires and tests. Tests were conducted for the implementation of learning based on learning style and based on the ways of thinking. Another instrument was VARK questionnaire sheets and thinking style questionnaire sheets. They were to gain information on what types of learning style and ways of thinking that students have. The data were analyzed by using techniques of regression and correlation.

### D. Findings

Based on VARK questionnaire version 7.0, it generally shows that the majority of the university students are 45.72% in average belong to visual learning style, 28.17% to auditory learning style, 19.24% to reading style and 11.39% others to kinesthetic style. The form of histogram can be seen as follows.

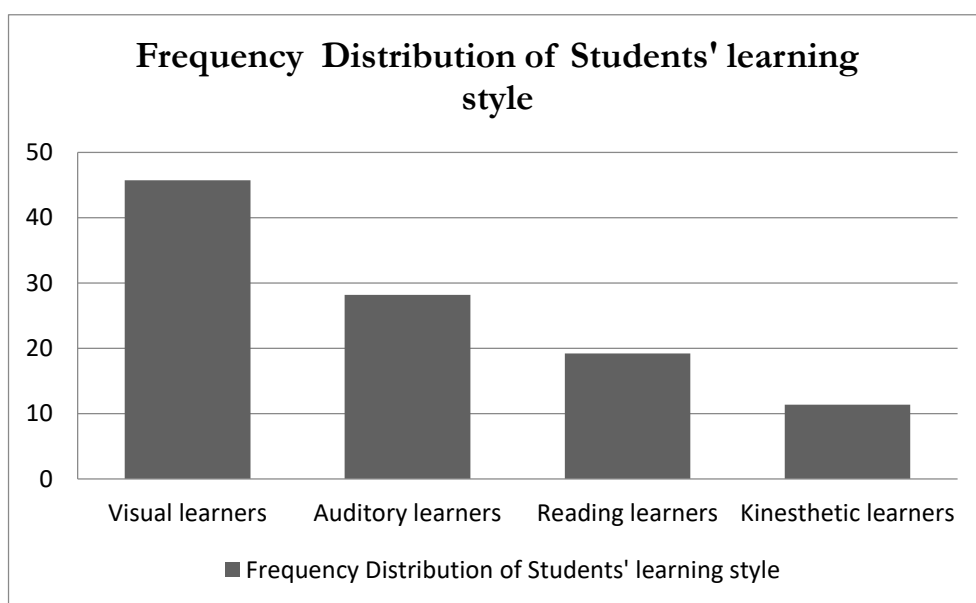


Figure: Frequency Distribution of Students' learning style

Based on thinking style questionnaire sheets, it indicates that the majority of university students 52.85% belong to Concrete Sequential, 23.45% to Abstract Sequential, 12.78% to Abstract Random, 10.92% to Concrete Random. Furthermore, these ways of thinking were related to learning styles. Concrete Sequential students tend to use visual style. Abstract Sequential tend to use reading and auditory style while abstract Random tend to use visual and kinesthetic style, and Concrete Random tend to use auditory.

Based on the calculation multiple regression with the constant value  $a_0 = -26.84$ ,  $b_1 = 0,277$  and  $b_2 = 0, 164$ . Based on analysis, there is significant correlation of learning styles and ways of thinking on the effective teaching on university students of English

education in the academic year 2015/2016. The result of the calculation by using the technique of regression analysis indicated the model of regression equation line  $Y = -26.84 + 0.277 X_1 + 0.164 X_2$ . The result of significant regression test F count  $13.67 > F$  table 3.32 means that the regression is significant.

The result of the calculation by using the technique of correlation analysis showed the multiple correlation coefficient  $X_1, X_2$  on  $Y = 0.570$ . the result of significant test Fcount ( 13.69) > F table (3.32). The contribution of both variables, learning style and way of thinking (  $X_1, X_2$ ) on effective teaching (  $Y$ ) = 32,29%. It is also known that the partial correlation coefficient between  $Y$  and  $X_1$ , if  $X_2$  was controlled (  $r_{y12}$ ) = 0,373. The result of significant test t count ( 3.27) > t table (1.67).  $Y$  and  $X_2$ , if  $X_1$  is controlled (  $r_{y21}$ ) = 0.209. the result of significant test t count (2.10) > t table (1.67).

## **E. Discussion**

The study findings generally indicate that the dominant learning styles used by university students is visual learning style. Specifically, the kinesthetic learning style is the least preferred style. The findings are contrary to what Vaishnav and Chirayu (2013) found out that the kinesthetic learners were the majority in the study on learning styles and academic achievement in secondary school students. Meanwhile the dominant ways of thinking used by students is Concrete Sequential.

In addition, it was found that some university students had more than one learning styles and ways of thinking. Actually, teaching students who have more than one learning style can give benefit for teachers in implementing various effective teaching techniques. It is in line with Gilakjani and Ahmadi (2011) in their study who shows that teachers incorporate these learning styles in their curriculum activities made the students are able to succeed in their classes.

In particular, the study findings on the correlation between learning styles and ways of thinking of the university students showed that there is a positive correlation between the two variables. Since there were four learning styles, the correlation was strong, consistent and significant with the VARK learners. Previous researches indicate that a better understanding of learning styles can be beneficial to both teachers and students (Rassool and Rawaf, 2008; Zhang and Lambert, 2008; Li, Chen, Yang and Liu, 2010). As such, it is inferred that learning styles and ways of thinking make an impact on the effective teaching. Such finding highlights the importance of recognizing students' varying learning styles and ways of thinking.

## **F. Conclusion**

Based on study, there is significant correlation between learning style and ways of thinking on effective teaching. It was found that the correlation coefficient (  $r_{y12}$ ) = 0.57 and the significant test F count ( 13.67) > F table ( 3.32). It indicates that learning style and ways of thinking contribute to effective teaching. As suggestion, lecturers should pay attention on learning style and ways of thinking in order to the learning objective can be achieved.



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