

A COMPARATIVE CORRELATIONAL STUDY OF GRADES SIX TO EIGHT STUDENTS' PERCEPTUAL LEARNING STYLE PREFERENCE AND THEIR LEARNING ACHIEVEMENT AT PAN-ASIA INTERNATIONAL SCHOOL, THAILAND

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Abstract: The purpose of this study was to investigate the perceptual learning styles of the grades six to eight middle school students in Pan-Asia International School located in Bangkok, Thailand. This study was also to determine the preferred learning styles of the students and compare those learning styles with the students' learning achievement. The research was conducted from December 14 to 16, 2015 in the first semester of the 2015-2016 academic school year at Pan-Asia International School. In this study, Reid's Perceptual Learning Styles Questionnaire was used as the primary source of data collection. The data collected from the questionnaire was analyzed by Percentage & Frequency, Means & Standard Deviations, One Way ANOVA and Pearson Product – Moment Correlation Coefficient. This study found that the participants preferred group learning style followed by mixed, kinesthetic, individual & auditory, tactile and visual learning styles. There was no significant difference between the grade six to eight middle school students' learning achievement, according to their most preferred learning style. The results of this study demonstrated that the grades six to eight middle school students did favor group projects as their most preferred learning style. There was no relationship between learning styles and learning achievement. Teachers should be aware of what learning styles are and how students are predetermined to prefer their own unique learning styles. Any teacher has their own methods of classroom instruction. Some teachers are aware of learning styles and can use learning styles to help with classroom engagement and higher student learning achievement. It is recommended that Pan-Asia International School uses current data to plan future professional development and school-wide changes in teacher instruction to help create a learning environment that best supports students' learning styles.

Keywords: Learning Styles, Achievement, Students' Perceptual Learning Style Preference.

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Introduction

Learning is the key to academic growth and when teachers match learning styles and teaching, instructional strategies, then the students benefit and excel in their academics. Different students learn in different ways and individual learning styles help to develop students' learning preferences. There are many different theories considering the best way for people to learn. It is interesting to think about your own particular way of learning and to recognize that everyone does not learn the way you do. Burns (1995) conceived of learning as a relatively permanent change in behavior with behavior, including both observable activity and internal processes such as thinking, attitudes and emotions. Burns realized that motivation is vital to this definition of learning. Burns concluded that learning might not manifest itself in simple observable behavior until after the educational program has been in place for a periodic timeframe.

Individual students have their own unique learning styles and perceive new information in different ways. Students' differing perceptions impact how well they can absorb and understand their academics. A learning environment that is sensitive to the students' variety of learning preferences is very conducive to better student achievement. Creating instructional varieties such as hands on materials, group projects, discussion groups, individual projects and learning centers gives the students a flexible method to imply their unique learning style in a positive manner (Kauchak & Eggen, 2003).

A variety in classroom instruction helps teachers to create a better learning environment that can be more engaging for students due to the use of the students' preferred learning styles. Stewart and Felicetti (1992) discussed that learning styles are the educational conditions that students are more likely to learn. Therefore, the importance of how the students prefer to learn is stronger than what the learners learn when considering learning styles and how they are properly implemented in the learning environment. Many students are used to teacher centered instruction and prefer that method of learning. Other students prefer working alone, while others prefer working in groups. Listening is a preferred method of learning for some and others like kinesthetic or tactile as their primary way to learn (Kauchak & Eggen, 2003).

In Pan-Asia International School there are over 450 students from a variety of countries, cultural backgrounds and native languages. The school has a professional development program, orientation and curriculum implementation to help teachers to instruct students in their learning environments.

The teachers at Pan-Asia International School have their variety of teaching methods that directly affect their students' learning. If a student is a visual learner and the teacher prefers lecturing only with little visual input, then that student's learning is negatively affected by the nature of the student's preferred learning style. The mismatch of teacher preference in presenting information and students' preference in learning is a problem that affects many classrooms. These mismatches can lead to poor performance by students in learning, assessments and motivation.

Students attending International schools also bring unique cultural and background experiences that make differentiation and proper implementation of preferred learning styles in the classroom more difficult for teachers to accomplish.

In this study, the researcher wants to help teachers and students alike to realize the importance of matching teaching styles to learning styles for the a more meaningful learning experience for all.

Objectives

There were four objectives:

1. To determine the preferred learning styles of the grades six to eight students at Pan-Asia International School.
2. To determine the level of the grades six to eight students' learning achievement at Pan-Asia International School.
3. To compare the grades six to eight students' learning achievement, according to their most preferred learning styles.
4. To determine the relationship between the grades six to eight students' learning styles and their achievement.

Literature Review

This chapter presents related studies and reviews of literature on learning styles. The purpose of this chapter is to highlight and relate important concepts of learning styles. The researcher used the materials to gain a clearer understanding of the concepts related to this study. The review of literature includes the nature of learning, theory of cognitive development, learning styles, Dunn & Dunn learning styles model, VARK learning styles model, multiple intelligences and learning styles, Felder - Silverman model, the Kolb model, the Honey and Munford's learning styles model, Reid's perceptual learning style preferences, previous studies on learning styles, criticisms of learning styles and an introduction of Pan-Asia International School.

The nature of learning varies depending on the individual and their individual learning preferences. Many factors can affect a student's learning according to experience, culture, language, enthusiasm, I.Q., and preferred learning styles. Since everyone's journey in learning started when they were babies, it is easy to understand that everyone does not learn exactly the same. A student's learning history is individual and not the same as another student. Students' variations in learning preferences make it difficult to use in classroom instruction that meets all students' preferred learning style.

When a student arrives in a new classroom the teacher has had no control over the student's past learning, environment or living conditions. The teachers are unaware of the students past and must by default do the very best to teach the student no matter what positive or negative learning elements that a student brings into the classroom. Some students are shy and reserved, while others show enthusiasm in learning. Some students are physically fit, enjoy socializing and participate well, while others are the opposite. Males and females respond differently to instruction from teachers (MacGilchrist, Myers & Reed, 2004).

The concept of learning styles and how best to achieve effective learning is one of the most important elements in education. Individuals learn in different ways and have unique and natural predetermined ways of learning that can be taken advantage of to increase the quality of learning achievement. Moreover, if there is a mismatch

of students' preferred learning styles and classroom instruction that can make students bored, unengaged and prone to failure.

There are many theories and definitions in the field of learning theories. Sometimes the terms get intermingled or confused due their variety of usages noted (De Bello, 1990). The terms *learning skills*, *learning styles*, *cognitive learning* and *approaches to learning* are used at various times and interchanged. This causes confusion at times in explaining the works of various researchers and their written studies on learning styles. This confusion is especially frustrating to those that are new in the field of study (Hargreaves, 1995).

Reid's Perceptual learning style preferences model was based on the Dunn and Dunn learning style model that was developed in the 1970's. The Dunn and Dunn learning style model are based on five categories: sociological, physiological, psychological, emotional and environmental. Dunn and Dunn developed their learning style model over several decades of work. The four perceptual preferences of the Dunn and Dunn learning model are visual, auditory, kinesthetic and tactile learning preferences. Reid (1995) expanded the four preferences by adding group and individual learning preference. Dunn and Dunn had previously classified group and individual learning styles as sociological factors.

Reid (1995) claims that three major categories of learning styles are widely recognized. These three learning styles are affective/temperament, cognitive and sensory or perceptual learning styles. Sensory or perceptual learning style is based on the physical learning environment that a student is immersed in. The students use their senses in order to perceive data.

According to Reid (1987) perceptual learning style is the characteristic of how learning is acquired through using different senses. Individuals use natural and habitual senses when they interact with new facts and learning opportunities. Dunn and Dunn over many years of research found that young children are principally kinesthetic and tactile learners. Dunn (1990) has shown that children are around ten years old they start to develop a stronger visual power and the ability to use auditory for learning new information. Also, that research refers to learning styles as points along a continuum. Learners can adjust or flex their preferred learning style depending on the learning environment or the task at hand. Before Reid's study of perceptual learning style preferences, many researchers had used cognitive style problem solving in academic achievement. ESL students come from different cultures and learning environments. Once ESL students enter a new learning environment that is taught by a teacher with limited knowledge of their individual learning styles, their learning efficiency can be affected. Most teachers and students are unaware of the difficult situation that students have to learn to overcome because of their language, culture and learning backgrounds.

Reid (1987) identifies six learning styles referred to as perceptual Learning Styles: Visual learning style preference: the learners understand and prefer to see visual displays of information as opposed to oral explanations of information. The visual learners like to see new information presented in visual ways, pictures, graphs or colorful examples. They can understand information better when they are given opportunities to see it displayed visually or read it. Proper note taking during oral lectures helps visual learners to write down and visualize information.

Auditory learning style preference: the learners are effective at understanding the information they hear. Auditory learners may memorize information when spoken to them in lectures, interviews and using auditory based learning materials. Classroom discussions and reading material out loud will benefit auditory learners.

Kinesthetic learning style preference: the learners are best when they physically participate in the learning or activity. Kinesthetic learners learn best when they go on field trips, role playing activities or do physical participation. They may benefit more when a movement or physical participation element is embedded within a classroom instruction.

Tactile learning style preference: the learners do best when they build something by hand or learn how things work by touching and feeling the way things are put together. They can learn more by experiments or building things in a step by step situation using their hands. Their hands-on activities can help their retention of information and important elements of their classroom instruction.

Group learning style preference: the learners learn more by participating with their classmates in active learning exercises. They enjoy and do well while learning new information in a group context. Group learners do well in study groups and class discussions of new information. Individual learning style preference: the learners learn more by doing work on their own and prefer not being interrupted by others. These learners enjoy reading and learning new information alone. The individual learner excels while working alone and can concentrate better with no other learners around.

Conceptual Framework

The study aimed to determine the preferred learning styles of students studying English at Pan-Asia International School and to determine if there is any relationship between students' learning styles and academic learning achievement scores.

The two variables of the research were the students' learning achievement and their preferred learning styles, including visual, auditory, kinesthetic, tactile, group and individual styles. The researcher compared the difference of students' learning achievement under different preferred learning styles, and to determine if there was a significant relationship between students' preferred learning styles and students' learning achievement through this study. Figure 1 shows the conceptual framework of this study as below:

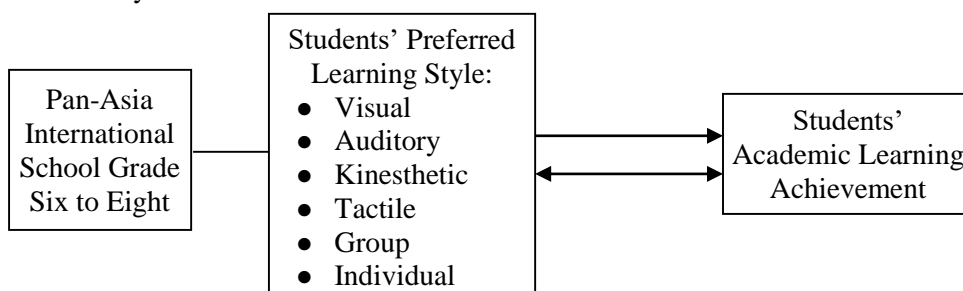


Figure 1: Conceptual Framework of This Study

Population

There were 113 grades six to eight students of the Middle School at Pan-Asia International School for the 2015 – 2016 school year. The grades six to eight students are taught in English by the researcher eight class periods a week. The students routinely are taught in a variety of learning styles that match with the items in the Reid's questionnaire.

Findings

The researcher collected data from the PLSPQ questionnaire for objective one: To determine the preferred learning styles of the grades six to eight students at Pan-Asia International School. The PLSPQ questionnaire was designed to indicate the students preferred perceptual learning styles from six categories: visual, auditory, kinesthetic, tactile, group and individual learning styles. Thirty items comprised the PLSPQ questionnaire and a 5-point Likert scale (strongly agree, agree, undecided, disagree and strongly disagree) was used to investigate the students' preference toward each item of the questionnaire. The researcher computed the mean scores for each learning style based on the replied data and identified the highest means scores to represent the students' most preferred learning style.

Table 1 shows the percentage and number of the preferred learning styles of the grades six to eight middle school students at Pan-Asia International School. The results pointed out that the most preferred learning style of the grades six to eight middle school students is group (26.5%) and followed by mixed (22.1%), kinesthetic (13.3%), individual & auditory both at (10.6%), tactile (9.7%) and visual learning style (7.1%).

Table 1: Frequency & Percentage of the Students' Preferred Learning Style of the Grades Six to Eight Students

Learning Styles	Number	Percentage
Visual	8	7.1
Group	30	26.5
Individual	12	10.6
Tactile	11	9.7
Kinesthetic	15	13.3
Auditory	12	10.6
Mixed	25	22.1
Total	113	100.0

Table 2 shows the means and standard deviation for research objective two: To determine the level of the grades six to eight students' learning achievement at Pan-Asia International School. The mean score of 85.16 in achievement demonstrates that the grades six to eight students showed a high level of achievement at Pan-Asia International School based on the Table 9 criteria of learning achievement.

Table 2: Means & Standard Deviation of the Learning Achievement of the Grades Six to Eight Students

	N	M	S.D.	Interpretation
Achievement Level	113	85.17	8.65	High

Table 3 shows the comparison of the grades six to eight students' achievement, according to their most preferred learning styles for research objective three. The researcher used one-way ANOVA to compare the grades six to eight students' achievement, according to their most preferred learning style.

Table 3 indicates that the probability of .766 is bigger than .05 at .05 level of significance, which means there were no significant differences of the grades six to eight students' learning achievement according to their most preferred leaning styles. Therefore, research hypothesis one, "There is a significant difference of grades six to eight student's achievements, according to their most preferred learning styles" was rejected and there were no significant differences among the grades six to eight students' learning achievement to their most preferred learning styles.

Table 3: Comparing the Grades Six to Eight Students' Learning Achievement, According to Their Most Preferred Learning Style

Learning Styles	Sum of Squares	df	Mean Square	F	Sig
Between Groups	254.787	6	42.464	.554	.766
Within Groups	8121.019	106	76.613		
Total	8375.805	112			

Table 4 shows the Pearson Product – Moment Correlation Coefficient for research objective four: To determine the relationship between the grades six to eight students' learning styles and their achievement. The significance result of .234 is bigger than .05, which indicates that there was no relationship between the grades six to eight students learning styles and their achievement.

Table 4: Relationship Between Grades Six to Eight Students' Learning Styles and Learning Achievement

		Learning style
Achievement	Pearson Correlation	.113
	Sig. (2-tailed)	.234
	N	113

Discussion

The results of this study demonstrate that the grades six to eight middle school students do favor group projects as their most preferred learning style. Group projects are used frequently at Pan-Asia International School as a teaching method. The students in PAIS use group learning styles in Primary School before they enter the Middle School. This familiarity of group learning styles helps the grades six to eight middle school students in their absorbing of new skill and information. Reid (1995) indicated that learning styles are individual and natural. Students learning styles are habitual in nature and they have preferred ways of absorbing, processing and retaining new information and skills. This study showed that the students prefer group learning style which may result from the habitual use of group projects in the primary school.

As mentioned in chapter 2, the Maklounf, Witte and Dahaway (2012) study of 441 secondary students showed that there were no significant ability differences in auditory and visual learning styles among male and female students. One of the findings in the study showed there were no statistical differences in kinesthetic, auditory and visual abilities. The study also showed significant differences in students with a kinesthetic learning style.

In this study however, group learning style was the most preferred and the classes were consisting of both girls and boys. The differences in the studies might be due to the large scale of 441 students in the Maklounf, Witte and Dahaway (2012) study compared to the 113 students in this study.

One study, finely (2000) developed a study on learning styles and academic learning achievement of high school students. The study showed that 81% of the kinesthetic students were more active in their participation in the class. The kinesthetic students had higher achievement than the passive students did with their higher level of engagement.

In this study, however, the engagement was not a factor in the study. The grades six to eight middle school students did have a high-level learning achievement and preferred group learning style.

Juris, Ramos and Castaneda (2009) created a study to determine if students' learning styles matched the teaching styles of teachers in public and private schools in Columbia. The study was built around 254 students and their 9 teachers in four different cities. Kinesthetic learning was the most preferred learning style followed by tactile. Auditory learning was the third ranking learning style in the study. One of the observations in the study was that the teachers did not match their teaching styles to the students' preferred learning style.

In this study, one of the leading ideas stated in the Statement of Problem is to help teachers match learning styles with classroom instruction. The Juris, Ramos and Castaneda (2009) study did not match their teaching styles to the students' preferred learning styles. This non-matching could be a factor in the students using Kinesthetic learning style as their most preferred learning style.

The study used the students' previous year's total grades percentage for measuring the students' achievement. The analysis of the data showed that the grades six to eight middle school students' learning achievement is high, according to the Pan-Asia International School's grading scale.

Students' achievement can be altered by the learning environment and learning styles implemented properly during classroom instruction. Often students that are strong in their academics can excel using several different types of learning styles.

Abidin (2011) created a study of 317 students using Reid's PLSPQ (1987) to investigate students' learning styles and their overall achievement. The analysis of the data indicated a significant relationship between learning styles and academic achievement. The study also showed that students with varying degrees of learning achievement have a similar preference pattern of their use in preferred learning styles.

A study in Turkey the Orhun and Orhun (2005 & 2006) investigated the relationship of learning achievement with one hundred and forty-two university students' preferred learning styles. The results showed that the Physics students had a significantly different achievement, according to the students' different learning

styles. Also, the study showed in the Calculus students had no significant difference in achievement, according to the students' different learning styles. These differing results indicate that different subjects may favor different learning styles and students may later their preferred learning style towards particular subjects.

This study used the grades six to eight middle school students previous total grade percentage with all subjects combined to measure achievement. This combined learning achievement could have been changed if the learning achievement was measured in different subjects as opposed to the total year's grade percentage.

A study in Iran Damavandi (2011) investigated two hundred eighty-five secondary students learning styles impact on their achievement. In the study Damavandi used the mean test scores of the major subjects English, Math, History, Science and Geography. The study was based on the Kolb's learning style model and the students were divided by assimilating, accommodating, diverging and converging groups depending on their learning styles. The findings showed that the assimilating and converging students were slightly more successful than the diverging and accommodating students.

This study showed that the grades six to eight middle school students had a high level of learning achievement with their previous total grade percentage. Damavandi (2011) used more participants and showed that some students did have higher learning achievement due to their learning styles. Damavandi (2011) also used Kolb's learning model as opposed to the Reid's perceptual learning style preference model that was used in this study.

This study's data concludes that there are no significant differences between the means of the grades six to eight students' learning achievement according to their most preferred learning styles. The grades six to eight middle school students use their learning styles but do not achieve greater achievement by using any of the learning styles. As mentioned in chapter 2, (Reid, 1999) determined that students' increased motivation results in more effective learning achievement. The grades six to eight students' motivation to use their preferred learning styles did not benefit their learning achievement in this study.

A study by Reid (1987) that investigated 90 university students revealed that the students preferred kinesthetic and tactile learning styles. This same study demonstrated that the students did not prefer group learning style. This researcher's study had opposite results with a majority of grades six to eight middle school students preferring group learning style. The past use of group learning style for the Reid (1987) study is unknown and could demonstrate those students lack of experience with that learning style and causing them to not prefer group learning style. The grades six to eight middle school students at Pan-Asia Intentional School do have a history of using group learning style which may account for the differences in these two studies.

The study's data determines that there is no relationship between the grades six to eight students learning styles and their achievement. The grades six to eight middle school students in this study mostly use group learning style. Despite their use of group learning style, it does not increase their achievement. This does not mean that some students do not benefit from their learning style preferences, but as a whole,

the students' learning styles do not show a significant relationship to their achievement.

Finely (2000) developed a study on learning styles and academic learning achievement of high school students. The study showed that 81% of the kinesthetic students were more active in their participation in the class. The kinesthetic students had higher learning achievement than the passive students do with their higher level of engagement.

A study conducted by Rouke and Lysnchuk (2000) used web-based and printed materials to teach a course. They divided the course into two groups and each group was tested after the course. Their findings of the study indicated that students with different learning styles have different learning achievement levels. In this researcher's study there was no increase in achievement for students who used their preferred group learning style. The two studies show differing results that could be caused by the students' past use of learning styles or the way the teacher's instruction favored one learning style over the other.

La San (2013) created a study of Burmese students determining that their preferred learning style was tactile. The study also showed that there was no significant difference in the Burmese students' achievement, according to their preferred learning style. This researcher's study had similar results of no significant difference in achievement, according to the grades six to eight middle school students' preferred learning style of group learning. The difference result in the preferred learning style of Burmese students tactile and the grades six to eight middle school students of Pan-Asia International School group might be due to the different languages taught or the teachers' classroom instruction.

Conclusion

The following conclusions are drawn from the findings of the study.

1. The grades six to eight middle school students preferred group learning style mostly followed by mixed, kinesthetic, both individual and auditory, tactile and finally visual.
2. The grades six to eight middle school students have a high level of achievement.
3. There were no significant differences between the means of the grades six to eight students' achievement, according to their most preferred learning styles.
4. There was no relationship between the grades six to eight students learning styles and their achievement.

Recommendations for Teachers

Teachers should be aware of what learning styles are and how students are predetermined to favor or prefer their own unique learning style or styles. Any given teacher has their own methods of classroom instruction. Some teachers are aware of learning styles and can use learning styles to help with classroom engagement and higher student achievement. A classroom filled with visual learners is more likely to have higher learning achievement if the classroom instructions have visual elements purposely embedded in it. If a teacher experiments with learning styles and finds their

students prefer leaning with particular learning styles, then the teacher should try to embed favorable learning styles into the classroom instruction.

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