

## The relationship of students learning Styles and historical Thinking

La relación de los estudiantes Estilos de aprendizaje y pensamiento histórico

Mohammad Al Ghazali Ab Hamid<sup>1</sup>

Universiti Kebangsaan Malaysia - MALAYSIA  
alghazalihamid@gmail.com

Mohd Mahzan Awang

Al al-Bayt University - JORDAN  
mahzan@ukm.edu.my

Jamsari Alias<sup>2</sup>

Universiti Kebangsaan Malaysia - MALAYSIA  
jamsari@ukm.edu.my

Muhamad Alif Shahdan<sup>2</sup>

Universiti Putra Malaysia - MALAYSIA  
alifshah1804@gmail.com

### ABSTRACT

The aim of this research is to investigate the relationship between learning style (LS) and historical thinking skills (HTS) among Malaysian secondary school learners. The Grasha-Riechmann model used in this study consists of independent, avoidance, collaborate, dependent, competitive and participant learning styles. However, the historical thinking skill is using the Malaysian Ministry of Education model which consists of understanding the chronology, exploring evidence, interpreting, imagining, and rationalizing. A total of 400 fourth-grade students were selected as sample from high schools in the district of Hulu Langat, Selangor. Data were evaluated using SPSS (Statistical Package for the Social Sciences 22.0). The findings of the pilot test used Cronbach's alpha assessment which showed that the learning styles were at a high point of reliability, 0.89 and 0.92 for the HTS. The findings of the descriptive evaluation test indicate that the dominant learning style is cooperative and competitive learning style.

**Keywords:** Learning Style, Historical Thinking Skills, History Lesson, Grasha-Riechmann, History Education.

### RESUMEN

El objetivo de esta investigación es investigar la relación entre el estilo de aprendizaje (LS) y las habilidades de pensamiento histórico (HTS) entre los estudiantes de secundaria de Malasia. El modelo de Grasha-Riechmann utilizado en este estudio consiste en estilos de aprendizaje independientes, evasivos, colaborativos, dependientes, competitivos y participativos. Sin embargo, la habilidad de pensamiento histórico está utilizando el modelo del Ministerio de Educación de Malasia que consiste en comprender la cronología, explorar la evidencia, interpretar, imaginar y racionalizar. Un total de 400 estudiantes de cuarto grado fueron seleccionados como muestra de escuelas secundarias en el distrito de Hulu Langat, Selangor. Los datos se evaluaron utilizando SPSS (Paquete Estadístico para las Ciencias Sociales 22.0). Los resultados de la prueba piloto utilizaron la evaluación alfa de Cronbach que mostró que los estilos de aprendizaje tenían un alto punto de confiabilidad, 0.89 y 0.92 para el HTS. Los resultados de la prueba de evaluación descriptiva indican que el estilo de aprendizaje dominante es el estilo de aprendizaje cooperativo y competitivo.

**Palabras clave:** estilo de aprendizaje, habilidades de pensamiento histórico, lección de historia, Grasha-Riechmann, educación histórica.

<sup>1</sup> Corresponding author.

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## 1. INTRODUCTION

History education in Malaysia is a core subject in the National education curriculum. This statement is discussed by (Dahalan, & Ahmad 2018) stating the significance of the historical subject which became much clearer when the Malaysian Ministry of Education (KPM) made this particular subject as one of the compulsory core subjects for students to pass the Malaysian Certificate of Education examination (SPM). These steps are in line with Malaysian multi-racial society, whereby history education can be used as a medium to educate and nurture unity.

Based on the Secondary School Standard Curriculum (KSSM 2016) history education in Malaysia highlights the elements of historical thinking skills in teaching and learning. The approach of this skill has also raised one pertinent issue, such as what is the importance of this knowledge to the students? (Spoehr et al. 2010) expresses historical thinking as the ability to criticise based on evidence, understand changes that happen as time passes by, empathise with the past, and investigate the cause of incidents based on the causes and consequences. This statement is in line with the historical training and learning module (KPM 2001) stating that historical thinking skills is a process that involves critical and creative thinking of students.

These skill elements require a wide range of approaches to be applied to students within a long-term period. Students are individuals with different tendencies. The aspects of thought, reaction, interests, achievements and understanding are among the differences in this aspect. This statement describes each student who possesses his own learning style to receive and respond as well as use a stimulus in the learning process (Jamian 2012). One of the important aspects of contributing to the success of students is the learning style. According to (Zapalska, & Dabb 2013) learning style is a key factor that determines the success and failure of a student. This statement clearly proves that there is a relationship between learning style and student achievement. In addition, among the causes of declining student academic achievement is that they fail to adapt to the way of teaching and learning, as well as not having a proper learning style (Abu et al. 2007) Universiti Teknologi Malaysia. Kajian ini berbentuk deskriptif dan menggunakan instrumen soal selidik dengan skala empat mata bagi mengukur lima kategori gaya pembelajaran dan enam aspek kemahiran belajar. Lima kategori gaya pembelajaran oleh Dunn dan Dunn adalah kategori Persekitaran, Emosional, Sosiologikal, Fizikal dan Psikologikal dan kemahiran belajar. Enam aspek kemahiran belajar adalah Kemahiran Membaca, Kemahiran Menguruskan Masa, Kemahiran Menulis Nota, Kemahiran Mendengar, Kemahiran Membuat Rujukan dan Kemahiran Menghadapi Peperiksaan. Nilai pekali Alpha Cronbach untuk kajian ini adalah 0.83. Dapatan kajian mendapati kategori Emosional (min 3.09, SP=0.63. This statement clearly proves that there is indeed a relationship between learning style and student achievement. Therefore, research on students learning style based on theory and learning style models is a worthwhile endeavour and can be used as reference to further improve the quality of national education.

## 2. LEARNING STYLES

Learning style is one of the contributing factors that determine the performance of a student. There are a variety of theories and models of student learning style. In general, the learning style approach of students can be divided into five aspects, namely personality, information processing, social interaction and preferred learning medium. This statement is based on the model by Curry (1987) discussed in (Cools, & Bellens 2012) which explains the learning style through the "red onion model". This model describes four main aspects namely personality model, information processing model, social interaction model and preferred learning medium model. Each aspect of the study examines and measures the learning style from a different perspective.

There are a number of researchers who have studied learning styles, such as Kolb (1984) based on the information and cognitive development approach, where learning style is seen as a specific feature and tendency to be used by individuals to access and receive knowledge. Dunn & Dunn (1978) define learning style according to the individual procedures of learning and responding to the factors that affect understanding. Selmes (1987) approached learning styles base on information processing on persons intellectual. Felder & Silverman (2002) describe learning style in four dimensions preferences base on tendencies for certain behaviour and often used in research related to learning styles in advanced learning technologies.

In this study the researchers used a model pioneered by (Riechmann, & Grasha 1974). This model has been developed to determine the style of student learning in the classroom. This model is used to identify student interactions with teachers and other students in their learning process. It is categorised into six elements namely independent, avoidance, collaborate, dependent, competitive and participant learning styles. (Montgomery, & Groat 1998) stated that the Grasha-Riechmann model focuses on students' responses to real learning activities. According to Grasha (1996) the style in the Grasha-Riechmann learning style scale can be described as the trait practised by students. Every student has his own style of learning, however, most individuals only have one or two dominant types of learning styles. This learning model enables the teacher or lecturer to identify student's learning styles to further improve their respective teaching style.

## 3. HISTORICAL THINKING SKILLS

The field of history has its own discipline structure just like any other field of science. The structure of historical discipline includes aspects of history, resource gathering, historical thinking skills, historical explanation, historical understanding and empathy. According to the statement by the Malaysian Ministry of Education (KPM 2016) in the Historical Curriculum and Assessment Standard Document (DSKP 2016), history is a science discipline to investigate the truth about the past. History is a subject that can stimulate thinking. It enables students to empathise and analyse how humans interact based on time, space, change and continuity.

The historical thinking skill model enhances student's cognitive skills to explore complex and abstract ideas. Thus, students are able to understand critically and imaginatively all aspects of human life to this day. These skills allow students to understand how historians reconstruct the past by using evidence-based resources to determine the significance of past dates, figures, events, locations and human activities (KPM, 2016). In addition, students will be able to understand historical features so that they can improve their thinking skills to be more critical and analytical. These skills are cultivated and developed among students with skills such as chronological skills, exploring evidence, interpretation, imagination and rationalisation.

#### 4. RESEARCH OBJECTIVES

1. Identify the types of learning styles practised by fourth graders students in history subjects.
2. Identify the level of historical thinking skills of students in history subjects.
3. Identify significant differences in the learning styles of fourth graders in history subjects based on gender.
4. Identify the relationship between learning styles and historical thinking skills.

#### 5. RESEARCH METHODOLOGY

This study used a five-point Likert scale survey to obtain data from a sample. The learning style component instrument used the (Riechmann, & Grasha 1974) questionnaire while the historical thinking skill instruments used the research developed by (Laila 2016). The validity of the content of the items in the study was examined and verified through discussion with the research supervisor. Pilot studies were performed to determine the reliability of the instrument before it was used in the actual study. The pilot study used 30 students to represent the fourth-grade high school student's population at Bandar Baru Bangi. The pilot test results on learning style and historical thinking skills are shown in table 1 below:

Table 1. Cronbach Alpha for Every Sub-Construct of Learning Styles

Learning Style Sub- Construct	Total Item	Cronbach Alpha Value
Independent	10	0.702
Avoidance	10	0.741
Collaborate	10	0.788
Dependent	10	0.639
Competitive	10	0.784
Participant	10	0.785

Table 2. Cronbach Alpha for Every Sub-Construct of Historical Thinking Skills

Sub-Construct KPS	Total Item	Cronbach Alpha Value
Understanding Chronology	6	0.790
Exploring Evidence	5	0.822
Interpreting	5	0.812
Imagining	5	0.674
Rationalizing	7	0.730

Based on tables 1 and 2, the alpha coefficient values for each element of learning style and historical thinking skills are accepted. This is in line with the opinion of Hair, Black, Babin and Anderson (2009) that the Cronbach Alpha value generally accepted and agreed upon by many experts is 0.7, however the alpha value of 0.6 is still acceptable and used in exploratory research. Nevertheless, according to Pallant (2001), an alpha index value of 0.7 or above is good for an instrument scale of ten or more items, while an alpha value of 0.5 is considered good for an instrument scale of less than ten items. Furthermore, Alpha 0.5 or higher is considered sufficient and sufficient for research purposes (Nunnally, 1967). Therefore, the reliability values derived from this pilot study are considered good because there are some constructs with less than 10 items. Moreover, Alpha values above 0.60 are frequently used by researchers as an index of reliability in studies (Mohd Majid 2005).

#### Population and Research Sample

The population for this study consisted of fourth-grade high school students in the Hulu Langat district of Selangor. According to information from the Selangor State Education Department, the total number of fourth-grade students in Hulu Langat district is 12116. According to (Krejcie, & Morgan 1960) a population of 12000 people requires 291 respondents as the sample size. As a result, a total of 450 sets of questionnaires were distributed to the respondents and 450 forms were returned to the researchers. This makes the response rate to be 100%. Out of the total 450 questionnaires collected, only 400 questionnaires could be used for further analysis with a valid response rate of 88.88 percent. This response rate is considered good because according to Sekaran (2006) a response rate of 30 percent is acceptable for the survey. Data analysis in this study involved descriptive statistics and inference using SPSS (Statistical Package for the Social Sciences 22.0).

**The interpretation of mean score values based on (Riechmann, & Grasha 1974)**

Table 3. The Interpretation of Mean Score Values

Learning Styles	Weak Score	Moderate Score	Dominant Score
Independent	1.0-2.7	2.8-3.8	3.9-5.0
Avoidance	1.0-1.8	1.9-3.1	3.2-5.0
Collaborate	1.0-2.7	2.8-3.4	3.5-5.0
Dependent	1.0-2.9	3.0-4.0	4.1-5.0
Competitive	1.0-1.7	1.8-2.8	2.9-5.0
Participant	1.0-3.0	3.1-4.1	4.2-5.0

Source: Grasha-Riechmann (1974)

**The interpretation of mean score value on historical thinking skills based on (Jamil 2002)**

Table 4. The Mean Score of Historical Thinking Skills

Mean Score Range	Tendency Level
1.00 - 2.36	Weak
2.37 - 3.66	Moderate
3.67 - 5.00	Strong

Source: Jamil (2002)

**The interpretation of the relationship between learning style and historical thinking skills using Pearson Correlation is based on Alias Baba (1997).**

Table 5 Relationship Strength between Variables

Correlation Coefficient	Correlation strength
0.00 - 0.20	Very Weak
0.21 - 0.40	Weak
0.41 - 0.60	Moderate
0.61 - 0.80	Strong
0.81 - 1.00	Very Strong

Source: Alias Baba (1997)

**6. RESEARCH FINDINGS AND DISCUSSION**

**Demographic Profile of Respondents**

Table 6. The Profile of Respondents based on Gender

Gender	Frequency	Percentage (%)
Male	210	52.5
Female	190	47.5
Total	400	100

Data analysis in Table 6 shows that the respondents of the study consisted of 210 male students at 52.5% and 190 female students at 47.5%.

**Type of Learning Style**

Table 7. Mean Score Analysis on Student Learning Style

Aspects	n	Mean Score	Standard deviation	Level
Independent	400	3.44	0.43	Moderate
Avoidant	400	2.95	0.60	Moderate
Collaborate	400	3.85	0.48	Strong
Dependent	400	3.60	0.41	Moderate
Competitive	400	3.59	0.56	Strong
Participant	400	3.79	0.49	Moderate
Total	400	3.53	0.49	Moderate

Overall, all learning styles show a moderate mean score of 3.53. Based on table 7, the mean score of independent style

is 3.44, avoidant 2.95, collaborate 3.85, dependent 3.60, competitive 3.59 and participant is 3.79. This indicates that the students practise all types of learning styles and are not tied to only one type of learning style to learn historical subjects in the classroom. Based on the findings, students show more tendency or preference towards the collaborative and competitiveness learning styles. However, these findings are contrary with (Chong, & Mahamod 2014) that stated dependent and participative style of learning is more adopted compared to independent, avoidant and competitive style of learning.

### Historical Thinking Skills Level

Table 8. Mean Score Analysis Level of Historical Thinking Skills

Historical Thinking Skills	n	Mean Score	Standard Deviation	Level
Understanding Chronology	400	3.59	0.66	Moderate
Exploring Evidence	400	3.69	0.75	High
Interpreting	400	3.66	0.31	Moderate
Imagining	400	3.81	0.65	High
Rationalising	400	3.72	0.59	High
Total	400	3.69	0.59	High

Overall, all historical thinking skills items show a high mean score of 3.69. Based on table 9, the imagining skills shows the highest score with a mean of 3.81. Data shows that the students strive to imagine a past event by using photographs of historical events for better understanding. This finding support a study conducted by Zarina (2013) showing student's skills in imagining is excellent. However, the mean score of understanding chronology is shown to be at its lowest level compared to other skills. This shows that students need to improve their ability to articulate the relationship between past, present, and future, and to highlight the changing times. The findings are in contrary with the study by Laila (2016) who showed that chronological skills are at a high level.

### Learning style differences based on gender

Table 9 T-test Analysis for Overall Comparison of Learning Styles based on Gender

Gender	n	Mean	sd	t	Df	Sig
Male	210	3.52	.308	-1.190	397.434	.074
Female	190	3.57	.285			

\*Probability levels is significant at <0.05

Table 9 shows the differences in learning styles among fourth graders in history subject based on gender. The study found that there was no significant difference in student learning style based on gender  $t(397,434) = -1.190$ ,  $sig = 0.074$   $p > 0.05$ ). The mean between groups indicated that the mean for male students was ( $M = 3.52$ ,  $SD = .308$ ) while the mean for female students was ( $M = 3.57$ ,  $SD = .285$ ). This data shows that gender does not play a significant role because it does not make any difference in terms of learning style in history subjects. The findings support the study conducted by Wan Zakri (2000), Nik Mohd Rahimi et al. (2010), (Puji, & Ahmad 2015) and (Ishak, & Awang 2017) that stated there were no significant differences in gender-based learning styles.

Table 10. Comparison of Sub-Construct Learning Style based on Gender

Type of Learning Style	Gender	N	Mean	Standard Deviation	t	p
Independent	Male	210	3.39	0.42	-2.109	0.07
	Female	190	3.49	0.44		
Avoidance	Male	210	2.95	0.64	-0.091	0.06
	Female	190	2.95	0.55		
Collaborative	Male	210	3.78	0.49	-2.827	0.18
	Female	190	3.92	0.45		
	Male	210	3.58	0.40		

Dependent					-3.765	0.01
	Female	190	3.74	0.41		
	Male	210	3.67	0.54		
Competitive					2.863	0.00
	Female	190	3.51	0.56		
	Male	210	3.76	0.48		
Participant					-1.565	0.01
	Female	190	3.83	0.48		

\*Probability levels is significant at  $< 0.05$

Table 10 shows the differences for each sub-style of learning among students based on gender. The findings show that independent, avoidant and cooperative learning styles were not significant at  $p > 0.05$ . Nevertheless, there was a significant difference in dependent, competitive and participant style at  $p < 0.05$ . From the mean score obtained, female  $M = 3.74$  were more likely to adopt a dependent style than male  $M = 3.58$ . This means that female students rely heavily on teachers to give them guidance in completing a task. In terms of cooperative style, female students are more dominant than male students. This means that female students tend to always follow instructions and focus on teaching. In addition, female students are more responsible for their learning and have better relationships with other students than male students. On the other hand, male students are more likely to adopt a competitive learning style than female students. This is because, male students are more likely to show off their greatness with a tendency to do better work. In addition, male students are always curious about the level of achievement of other student's performance.

### The Relationship between Learning Style and Achievement of Students in History Subjects

Table 11. Pearson Correlation Analysis Between Learning Styles and Historical Thinking Skills

LS		HTS		
	<i>n</i>	<i>P(sig)</i>	<i>r</i>	Relationship Strength Level
Independent	400	.000	0.29	Weak
Avoidance	400	.003	-.146	Very Weak
Collaborative	400	.000	0.47	Moderate
Dependent	400	.000	0.38	Weak
Competitive	400	.000	0.27	Weak
Participant	400	.000	0.45	Moderate

\*Probability levels is significant at  $< 0.05$

Table 11 shows all variables having a value of  $p < 0.05$  which concludes that there exists a significant relationship between all the learning styles of historical thinking skills among students. A positive and medium relationship is seen more dominant in the collaborative style  $r = 0.47$  and participant  $r = 0.453$ . This shows that students who learn to collaborate in the group will be able to learn better and able to improve HTS. However, for the style of avoidance  $r = -0.14$  shows significant negative relationships. The findings support the Grasha-Riechmann Model (1996) which states that students who practise their learning to avoid a tendency to have a low and weaker grade distribution while managing their duties. Overall it can be formulated that there is a significant relationship of learning style on HTS. In this study, researchers find students who learn to cooperate in the group will be able to learn better and able to improve their performance. In addition, students who are always responsible for attending all class activities and interested in learning can improve the skills of historical thinking. The findings of this study support the findings of research conducted by Rully Putri (2016) that there is a significant relationship between learning style with HTS. In contrary, the results from (Ghani et al. 2016) showed that the level of learning style is not correlate with students' academic achievement. In addition, studies conducted by (Ishak, & Awang 2017) also show no significant relationships.

## 6. IMPLICATIONS ON THE TEACHING AND LEARNING OF HISTORICAL EDUCATION

Education in Malaysia, particularly in historical education, has a wide range of areas that need to be improved so that the quality of education in Malaysia is at par with the education provided in other countries. All problems and deficiencies in the field of historical education serve as an opportunity for researchers to conduct studies and make improvements. Therefore, the findings of this study on learning styles play an important role in providing valuable information to curriculum makers, administrators and teachers. This study is thought to provide understanding that low performance or lack of interest in historical subjects may be treated as disinterest or lacking of student's knowledge. But in fact, it may occur because the student is having difficulty in adopting a certain learning style. Next, teachers with an understanding of learning styles will be more open minded and ready to implement effective learning activities. Furthermore educators who are aware and understand the difference in learning style will be more sensitive to different student's characteristics. Therefore, they will endeavour to diversify the way to teach historical subjects to improve their teaching quality. Consequently students who know their own learning styles will be able to improve their level of



achievement in mastering historical thinking as well as other subjects field.

## 7. SUMMARY

This study affirmed that learning styles practised by students are varied and are not tied to one type of learning style. The study shows that collaborative learning style is the most preferred learning style practised by students followed by participant, dependent, competitive, independent, and avoidant learning styles. There are significant differences in dependent, competitive and participant learning style based on gender. Moreover, there is a significant positive and weak correlation between independent, dependent, and competitive learning style with historical thinking skills. Nevertheless, the cooperation and participant learning style shows a positive and very low relationship. However, only avoidant learning styles indicate a significant negative relationship with historical thinking skills. In conclusion, the student's learning style is related to historical thinking abilities. Consequently, educators need to be aware of the differences in learning styles especially in history subjects and use the appropriate approach to correct existing weaknesses. Furthermore, students need to be aware and improve their learning style in order to maximize their achievement especially in history subjects.

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