

# Learning Style Preferences and the Level of L2 Achievement: A Case Study of EFL College Students

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This study investigated the relationship between learning styles preferences of English as foreign language (EFL) college students from three different achievement levels and to explore whether there is statistically significant difference between different achievement levels and different learning styles. A total of 120 EFL freshman college students from high, intermediate, and basic levels in Taiwan participated in the present study. Using a learning style preference checklist, students' perceptual learning styles were first explored in terms of preferences. 120 participants with different levels were classified based on their English scores on College Entrance Exam. With the use of descriptive statistics and a one-way analysis of variance (ANOVA), the results indicated that specific learning style preference correlated with certain achievement levels of students. Students with different achievement levels preferred significantly certain style preference to other style comparing to other achievement levels. It seems that learning styles preferences may not definitely relate to a student's achievement levels. Certain variables may also probably affect learning style preferences with respect to English performance.

*Keywords:* learning style preferences, EFL, achievement levels, College Entrance Exam

## Introduction

Learning is a process which contains various dimensions covering planning, application, and evaluation (Yazici, 2017), so learning outcomes may be influenced by multivariable, such as, learning environment, teaching methods, or individual differences (Ganyaupfu, 2013; Martin, 2002; Momanyi et al., 2015, as cited in Yazici, 2017). As for the individuals, one of the most vital factors that affect learning process mentioned in related literature is learning styles (Cano, 1999; Cano & Garton, 1994; Moussa, 2014, as cited in Yazici, 2017).

Research has examined individual factors affecting learners' learning outcomes. Differences in learning styles have come to the "forefront at all level of education" (Chen, Jones, & Xu, 2018, p. 1). Researcher also recognized the importance of the individual differences and called for researchers to examine the influence of learning styles in different learning contexts and called for teachers to pay attention to learners' diversity in course design (Halili, Naimie, Sira, Ahmed Abuzaid, & Leng, 2015, as cited in Chen et al., 2018).

The issues on the learning styles and academic achievements have investigated over the past decades, but the relationship between these two variables seems still up in the air. Some studies claimed that learning styles are biologically and developmentally features that make the learning more effective (Naserieh & Sarab, 2013), so

learners with multiple learning styles acquired greater learning outcomes (Claxon & Murrell, 1987; Felder, 1995; Reid, 1987, as cited in Soureshjani & Naseri, 2012). Studies have investigated the relationship between learning styles and students' academic achievement at the college level and found significant relationships between the learning styles and students' academic achievement (Kopsovich, 2001; Gokalp, 2013, as cited in Alkooheji & Al-Hattami, 2018). Yeow, Tam, Loh, and Blitz (2010) assess whether there was any correlation between learning styles and self-rated proficiency in English language and find a significant correlation between visual-verbal axis of Felder and Soloman Index of Learning Style (ILS) and self-rated proficiency in English language and assessment outcome. Visual learners and those with poorer English, score significantly lower during their clinical long case examinations. It seems that learning styles affect the learning outcomes of the learners (Bicer, 2014).

Other research indicated that learning style variables may not be strong predictor of foreign language achievement (Ehrman & Oxford, 1995; Daley, Onwuegbuzie, & Bailey, 1997, as cited in Gohar & Sadeghi, 2015) or may be only indirectly related to foreign language proficiency levels (Tabatabaei & Mashayekhi, 2012, as cited in Gohar & Sadeghi, 2015). Still other research found no significant difference in learners' academic performance with regard to the preferred learning styles (Okay, 2012, as cited in Gohar & Sadeghi, 2015). Researcher found that learning styles do not differ significantly and level of foreign language achievement (Bicer, 2014) and no significant difference between learning style and academic achievement of polytechnic students in international business course (Awang, Samad, Mohd Faiz, Roddin, & Kankia, 2017). Yazici (2017) found that there was no significant relationship between learning styles and class levels in the pre-service teachers' learning program. In the same line, the researchers found no significant relationship between VARK (Visual, Aural, Read/Write, Kinesthetic) style preferences and soil management science courses (Exuodxi, 2011, as cited in Awang et al., 2017) and microeconomics and macroeconomics courses (Boatman, Courtney, & Lee, 2008, as cited in Awang et al., 2017). Jayanama (2017) examined the relationship between learning styles and academic achievement of high and low proficiency students, studying Foundation English. No significant relationship between auditory, group, kinesthetic and individual learning styles and the academic achievement was found between high and low proficiency students.

Research has resulted in different categories, theories, criteria, and aspects of learning styles being proposed (Cimermanava, 2018), which in turn has resulted in various methods of assessing learning style, such as the Learning Style Inventory (LSI) of Kolb (1984), Perceptual Learning Style Preference Questionnaire (PLSPQ) of Reid (1984), Learning Channel Preference Checklist (LCPC) of O'Brien (1990), Productivity Environmental Preference Survey (PEPS) of Dunn, Dunn, and Price (1991), VARK (Visual, Aural, Read/Write, Kinesthetic) Learning Style of Fleming (1995), VARK Learning Styles Inventory of Fleming and Mills (1992), Grasha-Riechmann Learning Style Scale (GRLSS) of Riechmann and Grasha (1974), Building Excellence (BE) of Ruddle and Dunn (2000), Felder-Silverman Index of Learning Styles (ILS) of Felder and Silverman (1988), and Index of Learning Styles (ILS) of Felder and Soloman (1996).

Instruments for assessing learning style appear to have problems with their reliability or validity when applied across different cultures (Bailey, Onwuegbuzie, & Daley, 2000; Cutolo & Rochford, 2007). Therefore, researchers have called for more studies to be conducted from different perspectives (Gohar & Sadeghi, 2015; Bicer, 2014; Soureshjani & Naseri, 2012). Since the relationship between learning styles and academic success has not always been consistent, some believed the impact of learning styles on the academic achievement

(Kopsovich, 2001; Gokalp, 2013, as cited in Alkooheji & Al-Hattami, 2018), while others found no significant relationship between two variables (Gappi, 2013, as cited in Alkooheji & Al-Hattami, 2018). Still others asserted English as foreign language (EFL) learners in that the beginning learners preferred sensory learning styles; intermediate level learners liked thinking and feeling styles; advanced-level learners preferred global learning and local styles (Soureshjani & Naseri, 2012).

Even though studies on the relationship between learning styles and academic achievement have been examined over the past decades, there is a dearth of research to examine the relationship between these two variables at the technology college levels in EFL learning environment in Taiwan. This study aimed to figure out the pattern of learning style preferences among college students and to ascertain the correlations between learning styles and English achievement. It was hoped that findings from this study would facilitate the identification of college students whose learning styles preferences place them at risk of underachieving in L2 learning.

## Methodology

### Participants

The sample comprised 120 students took a required freshman English course at a university of Central Taiwan. All students need to take two-hour per week English as a foreign language course and gain two credits after they get the semester pass. The ages of the respondents ranged from 18 to 22. The participants were randomly selected from three levels: high, intermediate, and basic levels, based on their English scores of the College Entrance Exam. Each level contained 40 students. The students' English grades of their College Entrance Exam from the high level class ranged from 97 to 79. The grades from the basic level class ranged from 22 to 14. The grades from the intermediate level class ranged from 77 to 32. Forty are from the high level EFL class: 13 males and 27 females; 40 from the intermediate level EFL class: 5 males, 35 females; the rest 40 from the basic level EFL class: 22 males, 18 females. In total, 40 out of 120 (33.33%) were male, while 80 out of 120 (66.67%) were female.

### Instruments and Procedure

The Chinese version (Chen, 1999) of the LCPC of O'Brien (1990) was used to determine the participants' major perceptual language learning style preferences. According to Chen (1999), the LCPC is sensitive to different styles caused by cultural differences and is a useful style inventory with high reliability (Oxford, 1992; Kroonenberg, 1995; Oxford, 1995, as cited in Chen, 1999). Comprising 36 statements, the LCPC is self-scoring and has three perceptual categories of learning style preference: visual, auditory, and haptic (kinesthetic and tactile). The LCPC is scored using a 5-point Likert scale ranging from "almost never" (1) to "almost always" (5). The number indicates how often the respondent uses certain styles. To avoid interference caused by the learners' English language abilities, Chen's Chinese-version LCPC was employed, which has a test-retest reliability of 0.86 and has obtained face validity by being checked by five experts in the field of English teaching.

The researchers first made a link to the survey on the webpage and asked the participants to fill the questionnaire of Perceptual Language Learning Style Preference from different classes, high, intermediate, and basic levels. Then students' background was analyzed.

### Data Analysis

The data were first analyzed and identified by calculating the total scores for all three categories. The sum of Items 1, 5, 9, 10, 11, 16, 17, 22, 26, 27, 32, and 36 is the visual preference score, whereas the sum of Items 2, 3, 12, 13, 15, 19, 20, 23, 24, 28, 29, and 33 is the auditory preference score. The sum of the other items is the haptic preference score. Style preference was transformed into percentages, and the highest percentage indicated a participant's major learning style. A descriptive quantitative survey was used to study the relationship between learning styles and college students' English achievement level. In this case, whether students with different levels (high, intermediate, and basic levels) associated with their learning style preferences (visual, auditory, and haptic) needed to be investigated. A one-way analysis of variance (ANOVA) was conducted comparing variance in students' entrance exam scores as the dependent variable of the study between the three learning style categories of O'Brien's (1990) LCPC which was the independent variable of the study.

## Results and Discussion

### Learning Style and Achievement Levels

Table 1 portrays the mean scores of learning style preferences among students with high achievement, midterm, and basic levels. Students with high achievement level preferred visual style ( $M = 42.49$ ,  $SD = 5.66$ ), followed by auditory ( $M = 37.20$ ,  $SD = 4.58$ ) and haptic ( $M = 36.65$ ,  $SD = 5.56$ ). Students with the intermediate level used visual style ( $M = 40.85$ ,  $SD = 6.41$ ) as well, followed by haptic ( $M = 39.43$ ,  $SD = 6.14$ ) and auditory style ( $M = 38.23$ ,  $SD = 6.04$ ). Students with the basic level used the haptic style the most ( $M = 39.50$ ,  $SD = 6.59$ ), followed by visual ( $M = 38.80$ ,  $SD = 6.63$ ) and auditory styles ( $M = 37.95$ ,  $SD = 6.85$ ). In sum, students with high and intermediate levels preferred visual style, while those with basic level preferred haptic style. This finding echoes the assertion that "high and medium achievers preferred significantly more visual text learning" (Cutolo & Rochford, 2007, p. 8), while "low achievers only exhibited a slight preference" (Cutolo & Rochford, 2007, p. 9).

Table 1

*Descriptive Statistics of Learning Style Preferences for Different Achievement Levels*

Level	High (N = 40)		Mid. (N = 40)		Basic (N = 40)	
	Mean	SD	Mean	SD	Mean	SD
Visual	42.98	5.66	40.85	6.41	38.80	6.63
Auditory	37.20	4.58	38.23	6.04	37.95	6.85
Haptic	36.65	5.56	39.43	6.14	39.50	6.59

In order to determine significant differences between different learning styles and different achievement levels, a one-way analysis of variance (ANOVA) was conducted to investigate whether the learning styles preferences of college student with different achievement levels vary significantly with their achievement levels. Table 2 indicates that a significant difference among students' achievement levels was found only in visual style ( $F = 4.468$ ,  $p < 0.05$ ). As previous studies stated, visual style played the most crucial role for learning achievement (Kim & Kim, 2014) and was positively related to L2 and motivated behavior (Al-Shehri, 2009; Kim, 2009; Kim & Kim, 2011; Yang & Kim, 2011, as cited in Kim & Kim, 2014). However,

the results revealed that there were no significant differences among three levels in term of auditory and haptic styles. This finding exhibited that learning style variables may not always be a strong predictor of foreign language achievement (Ehrman & Oxford, 1995; Daley, Onwuegbuzie, & Bailey, 21997, as cited in Gohar & Sadeghi, 2015).

Table 2

*One-Way Analysis of Variance (ANOVA) for Different Learning Styles with Different Achievement Levels*

	Sum of squares	df	Mean square	F	Sig.
<b>Visual</b>					
Between groups	348.650	2	174.325	4.468	0.013*
Within groups	4,564.475	117	39.013		
Total	4,913.125	119			
<b>Auditory</b>					
Between groups	22.517	2	11.258	0.324	0.724
Within groups	4,069.275	117	34.780		
Total	4,091.792				
<b>Haptic</b>					
Between groups	211.050	2	105.525	2.826	0.063
Within groups	4,368.875	117	37.341		
Total	4,579.925	119			

Note. N = 120,  $p < 0.05$ .

A post hoc was carried out to compare the differences of learning styles between every two levels; i.e., high and intermediate levels, intermediate level and basic levels, as well as basic and high levels (Table 3). Bonferroni post hoc showed that visual style showed a significant difference between basic and high levels. This means students with high achievement levels significantly preferred visual style compared to their basic counterpart. It seems that the higher the achievement, the more used of students' use of visual style in this case. Kim and Kim (2014) confirmed the statement by explaining that "learners with a dominant visual orientation have the capacity to visualize the dream things using the mind's eyes" (p. 23) and thus "learners with visual style preference have advantage to acquire more successful English proficiency with the benefit from the ability to envision their ideal L2 self" (p. 23). Students with the intermediate level preferred auditory style the most, whereas students with the basic level preferred haptic style the most. Students with the intermediate level preferred auditory the most ( $M = 38.23$ ,  $SD = 6.04$ ) compared to those with high ( $M = 37.20$ ,  $SD = 4.58$ ) and basic level ( $M = 37.95$ ,  $SD = 6.85$ ). However, no significant differences were found in auditory or haptic styles among three different levels. One interesting observation is that students with high achievement level preferred visual style ( $M = 42.98$ ,  $SD = 5.66$ ) to haptic ( $M = 36.65$ ,  $SD = 5.56$ ). However, students with the low achievement level preferred haptic style to visual style. In the similar vein, it was also found that high school students' kinesthetic style was negatively interrelated with achievement; that is, a strong kinesthetic preference of Korean EFL students results in a negative role in their English learning as they become more mature learners (Kim, 2009, as cited in Kim & Kim, 2014).

Table 3

*Bonferroni Post Hoc Test for Differences in Learning Style Preferences*

Source	High (H)		Mid. (M)		Basic (B)	
	Difference	p	Difference	p	Difference	p
Visual (V)	H > M	0.392	M > B	0.435	B < H	0.010 *
Auditory (A)	H < M	1	M > B	1	B > H	1
Haptic (H)	H < M	0.134	M < B	1	B > H	0.118

### Conclusion

This study focused on the learning style preferences among college students among three different levels and also examined the relationship between learning styles and English achievement Taiwan EFL college learners. The research found that both high and intermediate groups preferred visual style to auditory and haptic style, while basic level preferred haptic style to the other two styles. The relationship between visual style and English achievement was shown. When high achievement learners significantly preferred visual style to haptic style, students with basic level showed the opposite direction.

As Gohar and Sadeghi (2015) asserted, “the variable of learning style is just one of the many factors which impact the learning process and outcomes” (p. 762), because every individual is different, so any single variable like styles, gender, learning background may not help us “determine the individual’s learning style supports the complexity of the human brain” (Bicer, 2014, p. 386). The present study also found the same line; it seems that not all styles significantly correlated with learning proficiency or achievement levels.

It is also suggested that courses be designed to cater to the majority of learners’ learning styles. Classroom learning requires combination of diverse styles which could provide learners different chances to engage in learning process so as to increase students’ course satisfaction (Powers, 2016). In order to enhance the students’ academic achievement, there are still many factors that need to be considered (Awang et al., 2017). It is recommended that further studies find the intervention of other variables affecting learners’ styles on learners’ performance, such as motivated behavior, learners’ majors, gender-related variance, or other developmental process of individual characteristics so as to further specifically identify the role of learning styles on students’ English performance.

### References

- Alkooheji, L., & Al-Hattami, A. (2018). Learning style preferences among college students. *International Education Studies, 11*, 50-63. Retrieved from <https://doi.org/10.5539/ies.v11n10p50>
- Awang, H., Samad, N. A., Mohd Faiz, N. Z., Roddin, R., & Kankia, J. D. (2017). Relationship between learning styles preferences and academic achievement. *International Research and Innovation Summit, 226*, 1-5.
- Bailey, P., Onwuegbuzie, A. J., & Daley, C. E. (2000). Using learning style to predict foreign language achievement at the college level. *System, 28*, 115-133.
- Bicer, D. (2014). The effect of students’ and instructors’ learning styles on achievement of foreign language preparatory school students. *Procedia-Social and Behavioral Sciences, 141*, 382-386. Retrieved from <https://doi.org/10.1016/j.sbspro.2014.05.067>
- Chen, Y. C. (1999). The perceptual learning style preferences of Taiwanese junior high school students in learning English (Unpublished master thesis, National Changhua University of Education, Changhua, Taiwan).
- Chen, C., Jones, K. T., & Xu, A. S. (2018). The association between students’ style of learning preferences, social presence, collaborative learning and learning outcomes. *Journal of Educators Online, 15*(1), 1-16.

- Cimermanova, I. (2018). The effect of learning styles on academic achievement in different forms of teaching. *International Journal of Instruction, 11*(3), 219-232.
- Cutolo, A., & Rochford, R. A. (2007). An analysis of freshmen learning styles and their relationship to academic achievement. *College Quarterly, 10*, 1-17.
- Dunn, R., Dunn, K., & Price, G. E. (1991). *Productivity environmental preference survey*. Lawrence, KS: Price Systems, Inc.
- Fleming, N. D. (1995). I'm different; not dumb. Modes of presentation (VARK) in the tertiary classroom. In A. Zelmer (Ed.), *Research and Development in Higher Education. Proceedings of the 1995 Annual Conference of the Higher Education and Research Development Society of Australia (HERDSA)* (pp. 308-313). Rockhampton, July 1995.
- Fleming, N. D., & Mills, C. (1992). Not another inventory, rather a catalyst for reflection. *To Improve the Academy, 11*, 137.
- Felder, R. M., & Silverman, L. K. (1988). Learning and teaching styles in engineering education. *Engineering Education, 78*(7), 674-781.
- Felder, R. M., & Soloman, B. A. (1996). Index of learning styles. Retrieved from <http://www.engr.ncsu.edu/learningstyles/ilsweb.html>
- Gohar, M. J., & Sadeghi, N. (2015). The impact of learning style of preferences on foreign language achievement: A case study of Iranian EFL students. *Procedia-Social and Behavioral Sciences, 171*, 754-764. Retrieved from <https://doi.org/10.1016/j.sbspro.2015.01.188>
- Jayanama, B. (2017). Relationship between learning styles and academic achievement of low and high proficiency students in Foundation English of Srinakharinwirot University. *Human Science, 9*(2), 18-30.
- Kim, T. Y., & Kim, Y. K. (2014). A structural model for perceptual learning styles, the ideal L2 self, motivated behavior, and English proficiency. *System, 46*, 14-27. Retrieved from <https://doi.org/10.1016/j.system.2014.07.007>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliff, NJ: Prentice-Hall.
- Naserieh, F., & Sarab, M. R. A. (2013). Perceptual learning style preferences among Iranian graduate students. *System, 41*, 122-133. Retrieved from <https://doi.org/10.1016/j.system.2013.01.018>
- O'Brien, L. (1990). *Learning channel preference checklist (LCPC)*. Rockville, MD: Specific Diagnostic Services.
- Power, C. M. (2016). Music student satisfaction: The relationship between learning style preferences and major satisfaction (Unpublished master thesis, The University of Tennessee, Knoxville).
- Reid, J. M. (1984). *Perceptual learning style preference questionnaire*. Laramie: Department of English, University of Wyoming.
- Riechmann, S. W., & Grasha, A. F. (1974). A rational approach to developing and assessing the construct validity of a student learning style scales instrument. *The Journal of Psychology, 97*, 213-223.
- Rundle, S., & Dunn, R. (2000). *Building excellence*. Pittsford, NY: Performance Concepts International.
- Soureshjani, K. H., & Naseri, N. (2012). Perceptual learning-style preferences of Iranian EFL learners in relation to their proficiency level. *American Journal of Linguistics, 1*(4), 70-74. doi:10.5923/j.linguistics.20120104.01
- Yazici, K. (2017). The relationship between learning style, test anxiety and academic achievement. *Universal Journal of Educational Research, 5*(1), 61-71.
- Yeow, T., Min, T., Loh, L., & Blitz, J. (2010). An investigation into the learning styles, English proficiency and assessment performance of medical students. *International Journal of Science, Medicine and Education, 4*(1), 7-13.