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EXPLORING PERCEPTUAL LEARNING STYLE PREFERENCES OF UNIVERSITY ESP STUDENTS IN TAIWAN

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Abstract. *Successful language learning depends on the understanding and manipulation of each individual learner's learning strategy needs according to their learning style, personality, cognitive type and aptitude (Wenden & Rubin, 1987; Yang, 1999). Due to these aspects, an English learner's learning style has a significant influence on their selection of learning strategies, which further affects their learning outcomes (Ehrman & Oxford, 1989, 1990; Oxford & Ehrman, 1988). Consequently, armed with such relevant understanding, teachers would be able to assist an individual learner's needs if the role of their preferred learning style was precisely determined. Therefore, this research was conducted to identify the learning style preferences of students in Taiwan who are undertaking ESP (English for Specific Purposes) courses at university level. The link between their learning style and individual attributes, such as gender, high school background, class, and language learning experience, was also explored. Statistics were obtained through a 30-item survey consisting of Reid's Perceptual Learning-Style Preference Questionnaire (1984) and a further eight items to ascertain the participants' background information. A stratified sample of 1,105 ESP learners from 10 schools at undergraduate level in Taiwan was used in this survey. The results indicated that ESP university students in Taiwan preferred kinesthetic and auditory learning styles. The findings revealed that learning style preferences were impacted by certain attributes, particularly gender, class and length of time spent practicing English. Furthermore, pedagogical recommendations and implications regarding learners' learning style preferences were also presented.*

Key words*: learning style preferences, ESP learners, university students, survey study, Taiwan*

1. INTRODUCTION

English learners' learning style is one of the main factors that determines how students learn English and how well, and has a significant influence on the selection of learning strategies, which, subsequently, affect learning outcomes (Ehrman & Oxford, 1990; Oxford , 2003; Oxford & Ehrman, 1988; Reid, 1987, 1995). If the role of a learner's learning style is precisely determined, teachers are then able to assist that learner by designing instructions that meet their needs. In addition, the study of perceptual learning style preferences has primarily been undertaken in ESL (English as a Second Language) and EFL (English as a Foreign Language) learning, while the relationship with ESP learning has been ignored and few researches have been focused on this field (Alsamadani, 2013). If the majority of ESP teachers are unaware of their students' learning styles during the teaching process, the learning outcomes will be limited. Therefore, it is necessary to examine language learning style preferences to encourage the concept of learning to learn

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among ESP students and, subsequently, encourage them to become effective language learners. In this study, the link between ESP students' learning styles and individual attributes was also explored.

2. Literature Review

2.1. Learning style preferences

Learning style refers to "the general approaches (for example, global or analytic, auditory or visual) that students use in acquiring a new language or in learning any other subject" (Oxford, 2003, p.2). Learning styles are not dichotomous, and operate a continuum or multiple, intersecting continua. For example, a person might be more introverted than extraverted, but not be totally introverted. These styles are "the overall patterns that give general direction to learning behavior" (Cornett, 1983, p. 9). It is now soundly acknowledged that, since the 1970s, some experts have attempted to understand how we learn by developing applied models/inventories of learning styles. Reinert (1970) first divided learning styles into four main perceptual learning channels. Other researchers also agreed with the same taxonomy (Dunn, 1983, 1984; Garger & Guild, 1984).

Dunn, Dunn & Price (1975) introduced a learning style inventory of 21 items, which included perceptual and physiological aspects of the learning styles of public school students so as to identify their learning style preferences. In this study, the term "perceptual learning style" is used to refer to learners' use of their various senses to understand, organize and retain experiences (Reid, 1987). Kolb's Learning Style Inventory (1976) measures how information is processed to make sense of concrete experiences. The other two most commonly used learning style inventories are Kinsella's (1993) Perceptual Learning Strengths Survey and Oxford's (1993) Style Analysis Survey (SAS). The following table shows the categories of the above mentioned language learning style preference surveys.

Reid (1987) was the pioneer who proposed the perceptual learning style preferences of ESL/EFL learners to present an overview of various learning-style measures at university level. Reid's study has high reliability and validity and has been widely used to assess the English learning style preferences of non-native English speakers. Consequently, this was the reason why this inventory, entitled "Perceptual Learning Style Preference Questionnaire (PLSPQ)" was used in this study as the participants were English learners undertaking undergraduate studies. The participants were asked to rate the 30 items of the questionnaire on a five-point Likert scale. According to Reid (1987), ESL/EFL learners can be divided into six different perceptual learning styles:

Visual learner	Learns well from seeing words in books, on the chalkboard, and in workbooks.
Auditory learner	Learns from hearing words spoken and from oral explanations.
Kinesthetic learner	Learns best by experience, by being involved physically in classroom experiences.
Tactile learner	Learns best when given the opportunity for hands-on experience with materials.
Group learner	Learns more easily when studying with at least one other student, and will be more successful in completing work well when working with others.
Individual learner	Learns more easily when working alone; thinks better and remembers information learned when studying alone.

2.2. Language learning style preferences and learner attributes

In 1987, Reid conducted a significant study on learning style preferences with 1,388 ESL students in the United States to determine their perceptual learning style preferences. The results indicated that ESL students strongly preferred kinesthetic and tactile learning styles and the learners' attributes, such as language background, gender, age, class, length of time in the United States, major, TOEFL score, level of education and length of time studying English in the United States, were related to the differences in learning style preference. Among these attributes, gender is the one that has been most commonly researched. Many researchers have discovered that males and females prefer different learning styles (Dorval, 2000; Cavanaugh, 2002, Reid, 1987; Tatarinceva & Blumenau, 2007) and that gender is the factor that mainly influences students' preferences toward learning styles (Honigsfield; 2001). Study results indicated that females preferred a lighter, warmer, more structured environment and kinesthetic learning styles while males preferred risk-taking learning styles (Maubach & Morgan, 2001). Class is the other factor that has widely been proven to be a factor that influences learning style preference. In addition to Reid's study in 1987, Chen (2009) also indicated the significant relationship between kinesthetic learning style preference and class among Taiwanese EFL elementary students. Other learner variables were also investigated and proven to be related to learning style preference by many researchers, such as Cornu (1999), Ehrman & Oxford (1990), Keri (2003), Green & Oxford (1995).

3. METHODS

3.1. Participants

A valid cluster sampling of 1,105 learners from 10 schools at undergraduate level was used in this survey on students' learning styles in order to understand students' individual English needs. Only freshman and sophomore students were chosen because ESP courses are only required in the first two years of college in Taiwan. There were 552 male (50%) and 553 female (50%) students in the sample. All the participating students had completed at least six years of English education and had graduated from high school prior to their enrollment in college. Of the 1,105 students who participated in this study, 646 (58.5%) were from general high schools, 444 (40.2%) were from vocational high schools, and 14 (1.3%) were from a five year college. The majority of the participants were freshmen (n=750) and the remainder were sophomores (n=355); 947 of them (85.7%) were under 20 years of age. In addition, most students had started to learn English from the age of 12 (n=278; 25.2%), only 65 (5.9%) had foreign study experience, and most of them claimed they only spent 0.5-1 hour per week (n=434; 39%) practicing their English.

3.2. Instrumentation

By far the most common type of assessment tool for language learning style is a written survey (Oxford, 2003). This study used the PLSPQ (1984) to gather data from the participants as described in the literature review section. The questionnaire contained 30 learning style items and eight items to determine the participants' background information. The second part of the questionnaire investigated students' demographic information for further analysis regarding the use of learning styles and considered the factors of gender,

age, grade level, high school background and English learning experience. The PLSPQ items were translated into Chinese to ensure a better understanding of the wording and to avoid any possible confusion. The Chinese versions were pilot-tested and yielded a Cronbach's alpha of 0.941, indicating an excellent internal consistency of the scale. The final questionnaire was then revised according to the results of the pilot tests and took approximately 15 minutes to complete.

3.3 Data collection and analysis

Participants were assured of their anonymity, and that the data would only be used for research purposes. Their participation was entirely voluntary and did not have any effect on their grades. The questionnaire data were analyzed quantitatively. For the learning styles identified by students, descriptive statistical analysis was performed. One way ANOVA, one of the common inferential statistical analysis methods, was used to determine whether any significant differences existed between learning style and the participants' attributes.

4. RESULTS

4.1. Learners' English learning style preferences

As listed in Table 1, the results showed that ESP students had a tendency toward kinesthetic learning styles, which had the highest score (39.06). The statistics in Table 2 indicated that most students chose a kinesthetic learning style (68.0%), an auditory learning style (51.4%) and a minor learning style for individual learning (63.0%). The tendency toward a kinesthetic learning style was similar to the results of Reid's 1987 study of Chinese EFL students, which showed a strong preference toward kinesthetic and tactile learning styles. The result of this study is also consistent with a study by Wintergerst and DeCapua (2001), which indicated that Russian students preferred a kinesthetic learning style followed by an auditory learning style. In general, the students in the present study least preferred kinesthetic learning style. However, this result is actually contradictory to the result of Reid's study, which stated that Asian students usually preferred individual more than group learning styles. In this study, it can be seen that 47.7% of students are group-orientated compared to 15.7% that were individual-orientated. It is worth mentioning that the Taiwanese ESP students considered kinesthetic (68%), auditory (51.4%) and group (47.4%) to be their most frequently used learning styles. In addition, the results indicated there were no strong learning style preferences (the highest score = 39.06) among Taiwanese students. This confirms Hyland's (1993) study of Japanese students in which he concluded that students were suffering difficulties when trying to learn English effectively.

Table 1 Overall learning style preference scores of ESP students

Learning Style (LS)	Visual	Auditory	Kinesthetic	Tactile	Group	Individual
ESP students	35.45	37.08	39.06	35.12	36.39	30.29

Notes: Major learning style preference = 38-50; Minor learning style preference = 25-37; Negligible learning style preference = < =24

Table 2 Overall percentages of learning style preference of ESP students

(LS) Preferences	Visual	Auditory	Kinesthetic	Tactile	Group	Individual
Major LS	38.4	51.4	68.0	33.4	47.4	15.7
Minor LS	58.9	46.7	31.4	63.7	49.0	63.0
Negative LS	2.6	1.7	0.5	2.9	3.4	21.2
Missing	0.1	0.2	0.5	0	0.3	0.2
Total	100%	100%	100%	100%	100%	100%

4.2. Learner's English learning style preferences in relation to learner's attributes

4.2.1. Gender and class

As shown in Table 3, the ANOVA results showed that the male and females' English learning styles differed significantly. Females preferred group learning significantly more than males, F (1, 1100) = 6.982, p =0.001. Sophomores indicated a significantly greater preference for group learning than freshmen, F (1, 1100) = 13.205, p = 0.000; sophomores significantly preferred an individual learning style than freshmen, F (1, 1101) = 8.284, p = 0.004. (see Table 4)

Table 3 One way ANOVA for students' ESP learning styles by gender

		SS	df	MS	F	Sig.
Visual *	Between Groups	81.522	1	81.522	3.385	.066
Gender	Within Groups	26540.029	1102	24.084		
Tactile*	Between Groups	192.223	1	192.223	6.982	.008
Gender	Within Groups	30367.791	1103	27.532		
Auditory*	Between Groups	52.125	1	52.125	2.265	.133
Gender	Within Groups	25360.393	1102	23.013		
Group*	Between Groups	459.011	1	459.011	11.687	.001*
Gender	Within Groups	43203.639	1100	39.276		
Kinesthetic*	Between Groups	34.444	1	34.444	1.057	.304
Gender	Within Groups	35868.714	1101	32.578		
Individual*	Between Groups	340.537	1	340.537	7.668	.006
Gender	Within Groups	48894.625	1101	44.409		

N=1,105 Note: *P＜.005

Table 4 One way ANOVA for students' ESP learning styles by class

		SS	df	MS	F	Sig.
Visual *	Between Groups	16.153	1	16.153	.669	.414
Class	Within Groups	26605.398	1102	24.143		
Tactile*	Between Groups	29.995	1	29.995	1.084	.298
Class	Within Groups	30530.019	1103	27.679		
Auditory*	Between Groups	90.934	1	90.934	3.957	.047
Class	Within Groups	25321.584	1102	22.978		
Group*	Between Groups	517.926	1	517.926	13.205	.000*
Class	Within Groups	43144.724	1100	39.222		
Kinesthetic*	Between Groups	23.932	1	23.932	.734	.392
Class	Within Groups	35879.227	1101	32.588		
Individual*	Between Groups	367.684	1	367.684	8.284	.004*
Class	Within Groups	48867.478	1101	44.385		

N=1,105 Note: *P＜.005

4.2.2. Age and high school background

To determine if there was any significant difference in the ESP learning style preferences among students in terms of their high school background and age, one-way ANOVA tests were performed. The analysis results showed that students' ESP learning styles do not differ significantly in terms of these two attributes.

4.2.3. Starting age of English learning and study aboard experience

To determine if there was any significant difference in the ESP learning style preferences among students in terms of the age the students began their English learning and students' foreign study experiences, one-way ANOVA tests were performed. The analysis results showed that students' ESP learning styles do not differ significantly in terms of these two attributes.

4.2.4. Length of time spent practicing English

To determine the length of time per week that students' spent practicing English, seven measures were used: (1) none, (2) less than 1 hour, (3) 1-2 hours, (4) 3-4 hours, (5) 5-6 hours, (6) 7-10 hours and (7) more than 10 hours. As shown in Table 5, the ANOVA results showed that time spent practicing English differed significantly. Students spent more time practicing English if they significantly preferred visual, tactile and kinesthetic learning styles, F (7, 1072) = 4.700, p = 0.000, F (7, 1073) = 4.861, p = 0.000 and F (7, 1071) = 8.048, p = 0.000, respectively.

Table 5 ESP students' learning styles by length of time spent practicing English

		SS	df	MS	F	Sig.
Visual *	Between Groups	774.571	7	110.653	4.700	.000*
Time	Within Groups	25236.359	1072	23.541		
Tactile*	Between Groups	922.067	7	131.724	4.861	.000*
Time	Within Groups	29077.185	1073	27.099		
Auditory*	Between Groups	426.971	7	60.996	2.659	.010
Time	Within Groups	24589.192	1072	22.938		
Group*	Between Groups	583.891	7	83.413	2.105	.040
Time	Within Groups	42393.341	1070	39.620		
Kinesthetic*	Between Groups	1748.992	7	249.856	8.048	.000*
Time	Within Groups	33249.615	1071	31.045		
Individual*	Between Groups	674.251	7	96.322	2.155	.036
Time	Within Groups	47866.798	1071	44.694		

N=1,105 Note: *P＜.005

5. CONCLUSION AND DISCUSSION

This study aimed to investigate ESP students' learning style preferences and to determine if there were any significant differences in these preferences according to the students' attributes. The results for the PLSPQ suggest a preference for a kinesthetic learning style among Taiwanese ESP learners at university level. An analysis of student attributes, particularly gender, class, and time spent practicing English, indicated they

differ significantly in their relationship with various learning style preferences. This confirms Reid's (1987) study results of 1,388 ESL students from 43 university-affiliated intensive English language programs in the US.

This study also highlights the importance and the need to understand learners' learning styles with regards to ESP as it is a territory that is different from ESL or EFL, which is based primarily on the requirements and goals that the students have. Future research projects might attempt to replicate this study with samples across different domains to validate the relative strengths of the learner attribute variables. In addition, we now have a better understanding of students' learning styles and should use this information to expand research in related topics. For example, the relationship between teaching and learning styles was not the focus of this study but might be a good topic for further study.

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