1-1-2008

Assessment of Adult ESL Learners' Preferable Learning Styles : Implications for an Effective Language Learning Environment

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Assessment of Adult ESL Learners' Preferable Learning Styles: Implications for an Effective Language Learning Environment

Thesis submitted to
the Graduate College of
Marshall University

In partial fulfillment of
the requirements for the degree of
Master of Science
In Adult and Technical Education
Area of emphasis: Teaching English as a Foreign Language Program

by

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December, 2008

ABSTRACT

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This research was conducted to investigate how adult ESL students learn effectively according to their learning preferences and their cultural/educational backgrounds. A total of 117 respondents in this study were categorized in three types: 58 language-based ESL students (L-B ESL students), 48 content-based ESL students (C-B ESL students), and 11 ESL teachers at Marshall University. In 2008, during the fourth week of September, the Productivity Environmental Preference Survey (PEPS) and a demographic questionnaire were administered to both L-B ESL students and C-B ESL students at Marshall University, Huntington, West Virginia. Descriptive statistics, including correlation analysis, were used to describe and summarize the data. The findings suggested that the students' educational status seemed to affect their internal needs ("motivation" in learning). The more ESL students learn in a professional field, the more they are likely to be motivated as they develop various types of learning styles.

ACKNOWLEDGEMENTS

The author wishes to acknowledge people who made this study achievable. First, I would like to acknowledge all the teacher educators, Dr. Howard R. D. Gordon, Dr. Laura Wyant, Dr. Lee Olson, and Dr. Clara Reese in the Adult and Technical Education Department for all their support, suggestions, valuable time and input during this study. I truthfully thank Dr. Howard Gordon, my thesis advisor, for his continued thorough support throughout this study. Without his support and patience, this thesis could not have been completed.

Second, I would like to acknowledge some people who are special that made the conclusion of my graduate career possible including Dr. Nancy Person and Dr. Jun Zhao. Their supportive expertise and valuable guidance for this study gave me enormous insights and thoughts.

Third, I would like to thank all the ESL teachers and students at the L.E.A.P. program and international students at Marshall University in the development of the survey for this study. I really appreciate their understanding and cooperation for my data collection.

Also, I would like to give a special thanks to Dr. Leonard Deutsch, Dean of the Graduate College, for promoting Summer Thesis Research grants for which I was awarded. With its much help, I am honored to complete this study as a member of Marshall Community.

On a personal note, my sincere gratitude is dedicated to Dr. Kiyoshi Yoshida who is always in my heart encouraging me to learn the meaning of life throughout my graduate career. Moreover, I really appreciate for warm support from my family and my friends during this period of study. Thank you very much for your smile and positive words!

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CHAPTER I

INTRODUCTION

The statistics from the Organization for Economic Co-operation and Development (OECD) and the United Nations Educational Scientific and Cultural Organization (UNESCO) (2008 of 2000-2005) indicates that nearly three million foreign students were enrolled outside their country of origin in 2005 for educational purposes. The number has doubled when it is compared with that of 2000. The ratio of foreign students by country of destination has not changed in ranking order (United States, United Kingdom, and Germany) since 2000. This fact clarifies the growing need of foreign language education, especially English, at the global level. In addition, nearly three million adult learners in the United States in 2005 were enrolled in ESL programs (U. S. Department of Education, 2008). This large population of English language learners shows the rapid growth of the immigrant population in the United States. In other words, not only multilevel classes but also cross-cultural understandings are being required to meet the needs of adult ESL learners regarding their diverse population (U.S. Department of Education, 2002).

Individual Difference in Multicultural Learning Environment

The research on adults' individual differences can be traced to several adult educational researches. The trend of adult learning research in the 20th century was to research adults' cognitive abilities in order to determine how they effectively learn (Fizzell, 1984, as cited in Gordon & Yocke, 2005). In the 21st century, however, educational researchers focus more on affective and physiological learning approaches in order to understand adult differences as a source of understanding the learners, instead of pointing out their deficiencies in their learning settings (Price, 1996). Consequently, educational researchers have focused more on various

aspects of learning styles and how they can be applied in educational settings (Graf, Leo, and Kinshuk, 2007). These facts indicate that more practical knowledge about learners need to be explored in order to make learning environments better. Melis and Monthienvichienchai (2004) also suggest that understanding individual differences as to their learning styles is crucial to offer an interactive learning environment for teachers and learners. Price (1996) emphasizes that:

> Productivity style theorizes that each individual has a biological and developmental set of learning characteristics that are unique. Productivity will improve when corporate organization training and instruction are provided in a manner that capitalizes on each individual's learning preferences (Gordon & Yocke, 2005, p. 3).

Thus, it is rational to say that such adaptive learning systems that integrate knowledge of the learners' individual differences are in need to create an effective learning environment (Melis & Monthienvichienchai, 2004). In terms of individual differences, Lightbown and Spada (2006) mention that individual differences are used to predict one's success in language learning in terms of personality, intelligence, aptitude, motivation, and the age at which learning begins. They point out that learners are likely to achieve their own positive experiences in their personalized learning environment where ensures their individual differences. Therefore, the in-depth consideration of individual's preferable learning styles is discussed in this study to elicit an effective learning environment for adult ESL learners.

The U.S. Department of Education (2002) also shows the trend of the current second language research as facilitating "the multifaceted, complex, and dynamic field" of adult ESL education, which considers an effective language transfer from students' own life experiences and their native language skills (p.35). It is suggested that this language transfer can be practiced through developing awareness of "background knowledge of students," and "real-life situations"

and collaboration within the community and educators (The U.S. Department of Education, 2002, pp.9-12). In other words, a multi-dimensional learning environment should be facilitated by encouraging adult students to connect their new learning experience with their previous learning experience. Therefore, identifying the inner and outer learning style preferences of adult ESL students would enable ESL educators to create a conductive learning environment. That is, an appropriate learning environment would allow adult learners to feel the moments of higher satisfaction as well as to facilitate self-directed learning.

With the importance of understanding learners' individual differences in mind, the learners should be taught in a student-initiated learning environment. This learning environment ensures an equal opportunity for the learners to obtain knowledge and skills in their own preferable learning styles (Honigsfeld & Schiering, 2004). Also, this educational environment will facilitate the synthesization of adult learners' knowledge from past and present experiences without interference from either "the mental [or emotional] effort of adaptation" (Melis & Monthienvichienchai, 2004). As it has been discussed, these multidimensional approaches emphasize how important it is to utilize adults' knowledge and past experience in the teaching environments with the knowledge of their learning style preferences.

Learning Styles

The term 'learning style' has been defined in several ways in numerous written works. For example, "an individual's natural, habitual, and preferred way of absorbing, processing, and retaining new information and skills [. . .] perceptually-based learning styles [. . . and] cognitive learning styles" (Reid, 1995, as cited in Lightbown & Spada, 2006). Grasha (1996) illustrated learning styles as "personal qualities that influence a student's ability to acquire information, to interact with peers and the teacher, and otherwise to participate in learning experiences"

(McCaskey, 2007, p.41). Keffe (1987) classified “learning style” with three dimensions: cognitive, affective, and physiological. These concepts on learning style show our unique humanistic characteristics in general. It indicates that one’s learning styles greatly influence the ability to acquire knowledge at one’s external and internal level.

Nevertheless, the critique of learning styles has claimed how difficult it is to determine these learning styles as immutable and changeable differences through learning experiences. This claim suggests to educators that they should be aware of “a high variability in strategy choice and the likelihood biases for those choices develop over time and experience” (Melis & Monthienvichienchai, 2004, p.1385). Reid (1998) also proposed that learning styles should be viewed as ones on wide continuums as a result of both nature and nurture in one’s experience. This idea indicates the humanistic roots of learning style research which include ambiguity and variability of human existence. Our ever-developing human individuality, therefore, should be studied in examining general laws or categories (Dörnyei, 2005). Thus, educators need to encourage the expansion of students’ repertoire of learning styles by understanding these humanistic aspects of learning styles. Dunn and Dunn (1978) suggested that educators should recreate previously successful learning experience with the knowledge of learning styles. In other words, the study of learning styles should be discussed on the effects of individuals’ learning experiences and cultural backgrounds.

In terms of students’ learning experiences, the relationship between learning styles and academic levels can be considered in several ways. Reid (1998) indicates that the successful language learners are likely to have multiple learning styles. It suggests that experienced learners are likely to possess more alternative ways to learn. Also, Rossi-Le (1995) shows that the successful students’ learning preferences tend to be similar: higher level students prefer learning

through interactive methods and direct experiences with language (As cited in Reid, 1998). This progressive tendency in learning processes should be concerned with allowing evey student to learn at his or her best. More concerns about the effects of different learning experiences are discussed in the following chapter, such as why teachers' learning styles differ from the students or how learning environments affect students' language processes.

Moreover, Reid (1998) indicated that cultural background plays an important role in learning style preferences. Kinsella and Sherak (1998) mentioned that "culturally absorbed ways of acquiring and displaying knowledge" are not easily altered because of its "part-biological and part-developmental set of characteristics" of the learning styles (p.88). This view overlaps with the affirmative idea of applying positive learning experiences to shape his or her views about the most effective ways to learn. Reid (1998), therefore, proposes that culturally-based behavioral tendencies are due to the influence of different educational values toward learning styles. Thus, more detailed educational values are discussed in the following chapter, namely, how a educational policy affects an educational value in the society.

Learning Styles Inventory

Dunn and Dunn (1978) have claimed that there is a need for individualization techniques to create a more holistic educational environment. They insist on an importance of diagnosing the individuals' learning style rather than applying contentious single-viewed human measurement with scores such as achievement scores and IQ tests. Although the learning style inventories have been criticized its potential limitation to measure both cognitive and behavioral style, they suggested an effectiveness of diagnosing the individuals' learning style. Dunn, Dunn and Price (1979-1997) believed that the information of individuals' learning

preference would guide both ESL educators and learners to create effective instructional environments for diverse learners. Thus, the PEPS was developed to explore the learning environment preferences for designing a variety of teaching techniques and adapting teaching methods to individual student needs.

Statement of the Problem

The increasing need of individualization in adult ESL education proposes how vital it is for ESL educators to achieve a more productive and effective learning environment by considering adult learners as a social being in a society. Thus, the focus of this study is to investigate how adult ESL students prefer to learn by analyzing the result of the PEPS in relation to the ESL learners' cultural and educational diverse backgrounds. Also, the result of this study will provide an indication of the commonality and similarity of ESL learner's learning preference in terms of their educational goals in both language-based and content-based ESL learning environments.

Purpose and Objectives of the Study

The purpose of this study was to identify a tendency of adult ESL learners' preferable styles in both language-based and content-based ESL learning environments. This study is anticipated to provide comparative results in preferred learning styles of adult ESL learners before and after studying at two different academic levels; one setting is focused on learning a second language, while the other is focused on gaining contents through a second language. The comparison will be a key point to determine the differences between the educational needs of adult ESL learners in different educational settings. The following specific objectives were developed to guide this study:

1. To describe selected characteristics (gender, major, learning experiences, and country of origin) of ESL students at Marshall University.
2. To identify the productivity and learning style preferences of ESL students in a language-based learning setting.
3. To identify the productivity and learning style preferences of ESL students in a content-based learning setting.
4. To identify the productivity and learning style preferences of ESL teachers at Marshall University.
5. To compare the productivity and learning style preferences of ESL teachers and ESL students in a language-based learning setting.
6. To determine the relationship between productivity/learning style preferences and selected variables (gender, major, learning experience, and country of origin).

Significance of Study

In conducting the literature review for this study, the researcher was unable to locate previous studies involving interpreting the diagnoses of learning styles into a language learning environment. Thus, this study will allow ESL educators to construct a foundation for further studies to be made and future investigations concerning diverse adult ESL learners. Moreover, it focuses on international ESL learners at Marshall University at both the undergraduate and

graduate levels. A variety of departments at the university is included such as the L.E.A.P. program (a formal ESL institution), 44 baccalaureate programs, and 46 graduate programs. Hence, the study will demonstrate how preferable learning styles of Adult ESL learners in both natural and instructional ESL learning environments differ, and how awareness of this difference could be incorporated into a more productive and effective learning environment for Adult English learners at all academic levels. The awareness of individual differences as well as learning preferences is thought to create optimum learning and productivity in Adult ESL settings at all levels.

Background and Setting

Marshall University is a medium-sized American public university that has over 150 years of history with a good regional reputation and national prominence (The Marshall University Survey, 2007-2008). The University (2008) offers 23 associate programs, 44 baccalaureate programs, and 46 graduate programs so that various career paths are available through a variety of departments in the university. Person (2001) elaborates on the wide range of offerings at Marshall University through the Intensive English program called L.E.A.P. (Learning English for Academic Purposes) program. The program allows foreign students to enter an undergraduate or graduate degree program at Marshall University without a TOEFL score, which is commonly required for non-native applicants to prove their English academic ability at many English-speaking colleges and universities.

Consequently, a survey conducted at Marshall University (2007) indicates that there are 2.3% international students from 64 countries (311 students out of 13,814 students) at all the academic levels at Marshal University: 1.2 % at undergraduate and 5.0% at graduate levels. Intensive English Program at Marshall University (2008) indicates average of 45 foreign students

study full-time each semester in the L.E.A.P. program. Person (2001) indicates that those students have been admitted to the undergraduate/graduate programs at Marshall University by achieving a satisfactory English level on the Test of English as a Foreign Language (TOEFL), the Michigan English Language Assessment Battery (MELAB), a Standardized Achievement Test (SAT), or graduating from the English as a Second Language (ESL) program (Person, 2001). These increasing numbers of international students at Marshall University at both pre-academic level (L-B learning environment) and academic level (C-B learning environment) will be able to show how differently those foreign students learn English with their preferable learning styles.

Among those international students, nearly 20% are admitted to the L.E.A.P. program in order to pursue a college-level education. They must complete the Advanced level 109 with a score of 83% or better in order to be admitted to Marshall University without a TOEFL score. In the program, he or she is given a Michigan Placement test in order to be placed into his or her appropriate level of study: Level 107 (Beginning), Level 108 (Intermediate), and Level 109 (Advanced) in the L.E.A.P. Intensive English program. Students with a score of (0-47) are placed in Level 107; a score of (48-74) are placed in Level 108, and a score of (75-100) are placed in Level 109. Thus, it can be said that this language learning program is aimed at academic improvement of adult ESL learners who are willing to study in higher academic level.

Assumptions

This study was based on the following assumptions:

1. The more students are exposed to cultural diversity in adult ESL learning settings, the more those learning environments should become flexible to accommodate individuals' differences in learning styles and life experience.
2. Analysis of adult ESL learners' learning styles in both language-based and content-based educational environments will enable ESL educators to shed a light on creating a more productive learning environment.
3. Comparative analysis of ESL students' and teachers' learning style preferences will suggest the needs of ESL learning environment in consideration of a gap in the result.
4. The learners' diverse life and learning experiences will be able to provide more flexibility to their learning style preferences, and help analyzing learners' developmental aspects of learning style preferences.

Limitations of Study

The generalizations made from the research study are subject to the following limitations:

1. The population sample is based on only one university. Therefore, the sample of participants is not a probability sample.
2. This study focuses on only ESL learners who are motivated for an academic purpose. Thus, it is further limited to the reflective responses of the specific participants.
3. This study focuses on international students at Marshall University.

Definition of Terms

For clarity of this study, these definitions apply:

Adult Learners – Adult learners are people who are over 18 and older. This study focuses on adult learners who are willing to learn a foreign language for their higher educational attainment.

English as a Second Language (ESL) – An instructional program to help individuals who have limited English-speaking ability improve their competence in the language. In this study, the term "ESL" is used for learning English as a second language in English-spoken learning environment.

Language-based ESL Learning Environment (L-B ESL learning environment) – This L-B ESL learning environment is considered as a formal learning setting, which generally "takes place in schools, which are social institutions that are established in response to the needs, beliefs, values, and customs of one's cultural settings" (Saville-Troike, 2006, p.128). In this study, this language learning environment will apply for adult ESL students who are studying English as a second language at formal language education, called L.E.A.P. intensive English program at Marshall University, West Virginia.

Content-based ESL Learning Environment (Content-based learning environment) – This C-B learning environment is considered as an informal learning setting, which generally takes place in settings where people contact with speakers of other languages and where people intent to learn certain content for earning credits in college (Saville-Troike, 2006). In this study, this language learning environment will apply for adult ESL students who have already acquired language proficiency in previous language education and have been using English as a second language in academic courses at Marshall University, West Virginia.

CHAPTER II
REVIEW OF LITERATURE

Views of ESL Education:

Learning Styles on Second Language Acquisition (SLA) Research

Saville-Troike (2006) proposed three major perspectives of the historical trends on second language acquisition (SLA): linguistic, psychological, and social views on SLA. A number of views on SLA demonstrated that understanding human language acquisition was, or would be, too complex to be determined in one complete theory. Nevertheless, as a corollary to the invisible field of human language acquisition, it was reasonable to say that every theory contributes to the study of language acquisition as a whole. It would be beneficial for language educators to understand both observable and intangible behaviors of learners in order to value their personal worth as human learners. In other words, it was recommended for ESL educators make effective predictions about the learners' learning styles based on their "universal characteristics" such as gender, learning styles, individual differences, and social contexts. This multidimentional view in SLA would allow educators to see a whole learner as a social being carrying one's "social class, power, ethnicity and gender" that are dynamic aspects of learners" (Mitchell & Myles, 2004, p.27).

Thus, it was reasonable to say that the multidimensional nature of SLA was a new direction in a SLA research field in order to facilitate the SLA learning environment as to their complementary dimensions. As one of those new directions, the study of learner differences, had been researched in regard to learners' more multifaceted factors. This was a cognitive approach to language acquisition by taking into account the age, the aptitude, and the motivation to explain

personality and learning strategies of ESL learners. Numerous researches suggested that it was worthwhile to consider what kind of learners' differences there were and how these differences could be utilized in the classroom in order to analyze the actual needs in SLA learning environments.

A Productive Learning Style for Adults

Coffield (2004) claimed that there were three broad principles in learning style models: habitual patterns of individual's behavior, classification of these behaviors, and reliable and insightful diagnostic tools. In consideration with these principles as a strategy to see more clearly who we are and what we need, numerous studies have pointed out that designing an effective learning environment was beneficial for the learners (Sahin, 2008). The more educators were concerned about the importance of the learners in learning environment, the deeper understandings of the learners as a social being emerged. Brown (2007) also suggested that "learning styles meditate between emotion and cognition" because of its natural internalization process of their total environment (p.120). Dörnyei and Skehan (2003, p.602) noted that the style "does imply some capacity for flexibility, and scope for adaptation of particular styles to meet the demands of particular circumstances" (as cited in Brown, 2007, p.120). In other words, it was important for educators to understand a multiplicity of learning styles reflected on the various learning environments throughout SLA learning processes.

In addition, Kelly (1997) mentioned that understanding one's preferred learning style had two benefits: identifying one's weakness as well as one's strengths. Especially, in ESL learning, the diagnosis of learning style helped students to understand their learning styles, made transitions to higher levels of personal and cognitive functioning, and allowed teachers to cover

materials in a way that best fit the diversity of the classroom (Kelly, 1997). This showed continuous awareness on students' learning styles would allow educators to interact with students in depth with sufficient knowledge. Nevertheless, Rogers (1996) and Kolb (1993) insisted that "the Learning Style Inventory was never intended to be used as a tool to segregate students with different learning styles" (As cited in Kelly, 1997). This contention evoked the importance of student reaction towards the results. Encouraging self-reflection should be one of crucial ideas in the use of learning styles.

Mann (2006) succeeded in applying the result of the Learning Style Inventory to help transform struggling students to achieve successful educational experiences. The result showed how to achieve successful educational experiences by using authentic teaching materials and student-centered atmosphere. The accommodation of teaching strategies should have met the predictable needs of the students. It is reasonable to say that a holistic view in learning, both external and internal views of a learner shown in the Learning Style Inventory, would be a good reminder to aid an effective learning environment. Nonetheless, it should be noted that the movement of learning style inventory allows educators to recognize the diversity of the learners in the classroom, which would contribute to improving the quality of ESL learning communities (Brookfield, 1990; Cross, 1981; Jarvis, 1995; Kemp, 1996; Knowles, 1990, McKeachie, 1994, Peters, 1991; as cited in Kienzl, 2008). Therefore, the idea of changeable learning styles shows how important for one to view preferable learning styles as developmentally constructed habits, which can be improved or transformed as to the educational needs (Coffield et al, 2004a; as cited in Dembo & Howard, 2007). In order to complement these varying learning styles, following four dependent factors can be used to help identifying the potential reasons or understandings about the relationship between learning styles and a learner in a more holistic manner:

Gender

Gender is still a contentious issue in SLA education. With numerous presumptions, the gender differences have been researched on academic attitude, mental representations, and both cognitive and physical skills in relation to hormonal variables (Saville-Toroike, 2006). For instance, the well-known belief in western cultures suggests that female's sociable characteristic affects better learning progress of second language (Saville-Toroike, 2006). Also, the previous research of learning style shows that women preferred more light, a warmer environment, structured environment, and kinesthetic learning (Price, 1996). Although these proposals are on a debate, this biological aspect of learning style is worth analyzing in order to gain more insight.

Major

Fazarro and Martin (2004) suggest learning style preferences of the students were likely to differ in each of the chosen majors. This tendency suggests similar learning styles were likely to be found among the participants who are in the same major. In this way, if learner's major was triggering the similar learning styles, it would be effective to see the relationship between a certain learning style and a major. It was assumed that the result would become a powerful indicator to understand learning styles of ESL students in an effective view.

Learning Experience

In relation to Kolb's (1981) experiential learning theory, Fazzaro and Martin (2004) pointed out that most of us developing learning styles as a result of our hereditary past life experiences and the needs of our present environment. The result of our hereditary equipment, our particular past life experiences, and the demands of our present environment emphasized

some learning abilities over others. ESL students' previous language experience would impinge on their learning style preferences. It should be indicated to provide more solid information about ESL students. There are two major assumptions about the differences in terms of the length of learning experiences. First, the more the learner has experiences in ESL education, the more students would be able to use various strategies that match their own learning styles. Second, the more the learner has experiences in ESL education in their native countries, the more students' preferences would be consistent with conventional styles in their countries.

Country of Origin

Reid (1998) indicated that our life experience influenced the way we learn so that there was a relationship between learning style and different cultural and socio-economic backgrounds. With that in mind, the information of country of origin would reflect a specific learning style from a specific country. Educators should consider how people construct their self-image or belief in their society in a more objective view. It is important for educators to apply the information as a fundamental framework to understand learners' need better.

Cultural Factors in Learning Styles

As previously indicated, cultural factors had strong impacts on students' learning style preferences. Kinsella and Sherak (1998) proposed that students tended to be successful in a traditional educational atmospheres that were conducted by a more didactic teaching approach (p.97). To put it differently, educational expectation in a society was reflected in their culturally constructed learning characteristics. For instance, their research showed that many Asian countries valued "the harmony and collective wisdom" so that class participation was seen discourteous, which was highly valued in most Western countries (Reid, 1998, xiii). Hispanic

educators tended to value cooperation more than competition in the classroom so that collaborative work would achieve a better learning outcome. These facts showed general images of the learners as well as their learning styles from culture to culture.

In addition, there were more studies about Asian students in response to the growing needs of English in Asian continents. Hansen-Strain (1989) demonstrated that the Asian groups (from Japan, Hong Kong, Korea, and "other Chinese") were substantially more field independent than the South Pacific groups (from Samoa, Tonga, Micronesia, the Philippines, and "other South Pacific") (as cited in Reid et al, 1998, p.17). Goodson (1993) also analyzed that the East Asian students would not choose group learning but preferred visual and kinesthetic styles of learning. (as cited in Reid et al, 1998, p.17). Cheng and Banya (1998) mentioned Confucian philosophy to describe Chinese students' learning preferences. They indicated that Chinese students were likely to learn by observing a learning model with others during the learning process, but at the outcome stage, individual achievement was likely to be valued.

Even though these culturally collective values showed general aspects of the cultures, the presumed knowledge about the learners was always of help for the educators. Specifically, analyzing transitional processes of learning styles would become practical knowledge for teachers. For instance, understanding this tendency of English speaking countries would guide what the ESL learners need to learn in the future. Reid et al (1998) introduced several research data as follows:

- most ESL students studying English in the United States showed strong major learning style preferences for kinesthetic and tactile learning.
- most ESL students showed a negative learning style for group learning (that is, they preferred not to learn in that way).
- ESL students from different language/cultural backgrounds often differed significantly in their choices of major, minor, and negative learning styles.
- ESL students from specific major fields often preferred specific learning styles (for example, engineering students preferred tactile learning, and students in the hard sciences preferred visual learning.) (p.18).

This general information suggested that ESL students tended to adopt what they experienced in the learning environment. In other words, whenever possible, the ESL educators would be able to create an ideal learning environment for the learners. Nevertheless, in order to face the human tendency to classify and stereotype, teachers must view students as individuals when diagnosing their learning styles. Also, their learning styles should be treated as one on wide continuum (Reid, 1998). Educators needed to consider how to facilitate transferring students' positive experiences by identifying students' learning styles (Christison, 1996; Oxford, 1989; as cited in Florez, 1998).

As indicated in the literature, several studies on learning styles had revealed that deeper understanding of students' learning styles would maximize their potentials in a better learning environment. In consideration with these individual and cultural factors in learning, ESL educators could predict how they can effectively design and facilitate their students' learning environment (Saville-Troike, 2006). Hence, the focus of this study was to determine the further effectiveness of adult ESL learners' individual and social factors in ESL learning environment. It was presumed that positive alterations based on certain knowledge about learners' productive styles would allow educators to improve learning outcomes and efficiency.

Also, this researcher believed that investigating the relationship between the different learning style preferences of adult ESL students in relation to their learning experience and cultural backgrounds, and how this impacts on variations in their learning preferences, would make a significant contribution to the field. This study was expected to provide useful knowledge for ESL educators to assess effective teaching approaches in order to create a productive learning environment for adult ESL learners.

Relationships between Learning Styles of Teacher and Student

Merril (2000) suggested that educators tended to emphasize on content-by-strategy interaction rather than learning-style-by-strategy interactions regardless of the instructional style (as cited in Melis & Monthienvichienchai, 2004). That is, learning styles were likely to react to what they are learning, rather than to how teachers teach. ESL teachers, therefore, were required to perceive how their students learn in relation to what they are learning. Reid et al (1998) pointed out that most teachers-in-training indicated preferences for multiple learning styles. In this case, their being successful university students was considered as a cause or a result. Cornett (1983) also suggested that the rich experiences give a greater variation to the teacher's learning styles (as cited in Cheng & Banya, 1998, p.81). In other words, there were considerable differences between learning styles of the teacher and of the student. In this case, the ESL educators needed to reflect how they teach in order to recognize how students learn.

Poskey, Igo, Waliczek, Briers and Zajicek, (2005) suggested that it was within the learning processes that teachers could expand the potential of learning styles. They emphasized on the potential of teachers' effective learning environment by "addressing students' learning styles and providing learning opportunities to complement learning styles" (p.118). Coeffield et al (2004a) suggested that "instructors respond well to examining their own teaching and learning styles, which may lead to greater sensitivity to students whose learning styles are different" (as cited in Dembo & Howard, 2007, p.106). Thus, instead of considering learning styles as a fixed concept, educators should understand its multifaceted views that shape students' educational performance.

Moreover, a study (Mickler, Mary Louise; Zippert, Carol Prejean, 1987) demonstrated higher achievement gains by adjusting teaching methods to coincide with the learning

preferences of students in their school (Price, 1996, p.26). Brain-based literature also pointed out "the importance of positively engaging emotion to improve learning and retention" (Caine & Caine, 1990; Caufield, et al, 2000; Hardiman, 2001; Reardon, 1998-99; Sousa, 1998; Weiss, 2000; as cited in Kitchel & Torres,2005, p.163). Also, Mason and Weller (2000) reported that "students' satisfaction was affected mostly by instructor support, the amount of time devoted to study, and the extent to which the course content and presentation fit students' expectations and learning styles" (Sahin, 2008). In other words, understanding students' learning styles would be informative beyond the findings as "good teaching is derivative born not of its own rules but of those governing the process it serves" (Perry, 1986, p.187; as cited in Claxton & Murrell, 1987).

In addition, Myers and Dyer (2004) proposed the undeniable question in this learning style movement as to its superiority in the actual learning processes. They mention Gregorc's idea (1982a) that "whereas each of these learning styles consists of a certain set of characteristics, no one style is better or worse than the others" (as cited in Mayer & Dyer, 2004, p.381). It showed how important it is to respect student's learning preferences, although there are numerous ways to choose from. He also noted that "very few learners possess the flexibility to meet the demands of learning situations that digress very far from their preferred style" (p.381). Along with his idea, the existence of preferable combinations, or effective matching, between a certain learning style and a method of instruction should be concerned in ESL education.

Thus, the appropriately utilized teaching methods with student learning styles are suggested after identifying students' learning styles. In other words, not only to identify how students learn, educators should recognize how subject matter should be taught in order to develop students' learning style repertoires (Dembo & Howard, 2007). Providing methods, materials, and resources fit the ways in which the students learning, the teaching approaches in

regards to learners' preferred learning styles, seemed to be the most effective way to maximize the learning potential of the individual student (Gordon & Yocke, 2005).

Rosenfeld and Rosenfeld (2004) researched on teacher sensitivity to individual learning differences in order to gain insights of effective teaching. The research showed that awareness and accommodation towards the diverse needs were crucial in multicultural learning environments. While self-awareness of learning style preferences was helpful for self-development of teachers, the teacher's understanding of learning style produces more opportunities for students to consciously learn from their learning styles. In other words, the better self-awareness produced the more positive attitude with the practical knowledge of learning styles. They concluded that teachers' role was valuable for several reasons: to promote self-awareness, to provide more self-reflections, and to help expand experiences for future studies. Also, it was indicated that learning style can be a useful communication tool between students and teacher. It meant that the complex status of learning styles in social contexts should be seen as a co-developing outcome between the teacher and the student.

Learning Styles and Academic Levels (L-B and C-B Learning Environment)

Successful learning styles were more internally based characteristics in comparison with more externally and consciously developed learning strategies (Reid, 1998). This indicated that the difference between language-based ESL learning environment (L-B ESL learning environment) and content-based ESL learning environment (C-B ESL learning environment) would cause several essential differences. First, C-B ESL students were likely to build up their language skills unconsciously. This was because their main educational purpose was to learn the content in their major fields. In other words, there would be more possibilities of varying learning preferences according to their majors. In contrast, L-B ESL students were likely to learn

their language skills explicitly. In this way, the learning style preferences of L-B ESL students would be more affected by their cultural and their educational backgrounds.

Second, knowledge providers or facilitators of language acquisition are different in the different learning environments. The knowledge providers in L-B learning environment are more focused on teaching English as a second language, while the facilitators in C-B learning environments are likely to focus more on providing knowledge or skills to the students through English as a medium of communication. In addition, as the fact that most of teachers had learning preferences for multiple learning styles, it could be surmised that the higher academic levels expand the variability of learning styles in accordance with the rich learning experiences. Therefore, there would be more considerable differences in these two learning environments as to both external and internal factors.

Cheng and Banya (1998) proposed that students tended to be more visual in a formal learning setting because the target language was learned as a foreign language and linguistic accuracy was the major concern; on the other hand, students tended to be more auditory or kinesthetic in an informal learning situation because communicative fluency was more emphasized in the setting (p.80). Consequently, it could be said that C-B learning environments for ESL students was not as same as L-B environment in terms of their objectives, approaches, and outcomes in instructions. As C-B learning setting focuses more on academic achievement, less on mental and linguistic pressures. In this sense, the C-B ESL students would require different learning environments and learning styles to learn language compared with the needs of L-B learning environment.

Similarly, it was presumed that the L-B students tended to rely less on social interactions to learn the language. English language was still their subject to learn and practice in the L-B

learning setting so that the ESL learners had limited target language ability. These differences were likely to affect how ESL students learn and function in a certain educational setting. The differences could be used to identify how differently the ESL learners learn in two different learning settings. In addition to that one could determine how an educator accommodates her teaching styles to match the needs of the students.

The Use of Productivity Environmental Preference Survey (PEPS)

This Learning Inventory was grounded in both Cognitive Style Theory and Brain Lateralization Theory by utilizing five stimuli of the 21 elements:

1. Environmental (sound, light, temperature, design);
2. Emotional (motivation, persistence, responsibility, structure);
3. Sociological (self, pair, peers, team, adult, varied);
4. Physiology (perceptual, intake, time mobility);
5. Psychological/cognitive processing (global, analytic, hemisphericity, impulsive/reflective) (Dunn & Dunn, 1978).

This Survey is a self-report instrument designed to identify "how adults prefer to function, learn, concentrate and perform in their occupational or educational activities" (Mental Measurements Yearbook, 2008). The authors suggest that "this survey may be used to include the selection of individuals and formation of groups when all group members need to have similar productivity styles…as a product of the interaction of biological and developmental set of learning characteristics" (Mental Measurements Yearbook, 2008). As this instrument is based on the idea that "individual students at every age level differ in how they learn new and difficult information," it allows the study to include not only cognitive preference but also physical preference in terms of environment and social aspects in needs (Gordon & Yocke, 2005, p.4).

Several experiments have found that "most students elected to use specific methods

repeatedly once they had experienced success with them" (Dunn & Dunn, 1978, p.3). This shows that individuals' preferred learning styles are likely to become learning styles which cause one to feel a sense of success, importance, or meaningfulness to learn. A number of results account for learners' preferred learning styles have demonstrated its effectiveness on students' awareness of their own learning styles, the advantages of matching students' learning styles and teaching styles on tests, fact knowledge, attitude, and efficiency (Price, 1996). Also, it is believed that an appropriate awareness of individual learning style could aid both educators and learners by facilitating learners' tasks in their own style, which "enables them to behave positively by making them capable of doing what they have been assigned" (Dunn & Dunn, 1978, p.8). That is, preferred ways of learning will provide "more positive self-image, motivation, and behavior through personal success" is crucial to be identified and applied in an effective learning environment (p.9).

In addition, the Productivity Environmental Preference Survey (PEPS) was developed through several experimental research projects by identifying the individuality of how students tend to function and learn (Dunn & Dunn, 1978). The PEPS has been developed based on the idea that there should be an environment where one can become productive with his or her physical or emotional comfort. Although this Model does not include the cultural aspect in identifying learning style, it has numerous potentials to investigate the practical ongoing styles in the learning environment with its holistic approach. Mangino (2004) revealed that the Dunn and Dunn Learning-Style Model was comprehensive, extensively researched, and effective as to its higher levels of consistency. Nixon, Gregson and Spedding (n.d.) also insisted that Dunn and Dun Model was to adopt a developmental view of learning styles rather than fixed view. They addressed that the learners' learning styles would promote the development of a full repertoire of

skills as “indications of the starting point from where a journey begins” (p.5). Therefore, the PEPS was used to identify the differences in productivity and learning styles of adult ESL learners and their teachers in two different ESL learning settings.

The critiques of this Survey were: the size of samples, inconsistent results, missed references, and self-reported assessment. As to the limitation of data collection, this research was not able to reconcile these critiques in the size of samples and in the nature of self-reported assessment. Nevertheless, the researcher paid careful attentions in deriving the results with accurate references. In addition, with these weaknesses of the Survey in mind, this researcher added five independent variables of interest in the study as follows: gender, major, groups, learning experiences, and country of origin. These independent variables were chosen as to their considerable influences in previous researches. The data from these variables would guide the researcher to draw an adequate inference on student’s learning preferences in relation to their background knowledge.

The researcher believes that these variables would guide the researcher to draw an adequate inference on student's learning preferences in relation to their background knowledge. Specifically, the PEPS would enable educators to identify the ways in which adult ESL learners are most likely to succeed and the methods that respond most closely to their learning style characteristics. This will show that having a flexible instruction system which can respond to the needs of learners is advantageous to maximize their capacities and academic progress (Dunn & Dunn, 1978). In other words, the awareness of students’ differences in environmental, social, emotional, and physical needs will shed light on a learner as a rich resource for educators. Recognizing diverse needs will pave a way for educators to provide a range of comprehensive learning environments for various learners.

Summary

This chapter has been presented as an overview of the literature pertinent to the study. It reviewed the clarification of the definition of learning styles in education with a review of the variety of definitions previously applied to second language education. The chapter also discussed a brief review of the current issues on second language education, which is specific to the dependent and independent variables as well as the application of the learning styles in the educational settings.

These articles revealed insufficient attention regarding the relationship between teachers' learning styles and adult ESL students' learning styles. Specifically, it is clear that little research has been conducted in terms of both teacher's and student's learning styles at adult ESL education level. Fazarro and Martin (2004) propose that understanding of learning styles has become more critical when applied to diverse population in the classroom. As a result, the Dunn and Dunn Learning Style Model will be used to examine different ways of students' learning. With respect to diverse cognitive, affective, and physiological aspects, it would maximize the potential of student learning styles (Brown, 2007).

CHAPTER III
METHODOLOGY

Population and Sample

In the fall semester of 2008, specifically during the fourth week of September, a convenience sample was selected from a population of enrolled international ESL students and ESL instructors working at Marshall University, West Virginia. The demographic information was collected at the same time as the administration of PEPS. The sample population of students consisted of students from two types of ESL learning settings: language-based ESL learning environment (L-B ESL learning environment) and content-based ESL learning environment (C-B ESL learning environment) as indicated in the introduction. The two sample populations of L-B ESL students and ESL teachers were purposefully collected in the L.E.A.P. program (Intensive English Program) at Marshall University. The participants were asked to complete demographics questionnaire and the PEPS under supervision of a panel of experts, the director of international students and the researcher.

The sample population of students from C-B ESL leaning environment was obtained in through an advertisement and personal contacts. The researcher provided the C-B ESL students an e-mail (through international mailing list of Marshall University) requesting to participate in the survey held in the morning and afternoon for a week at Harris Hall 437, Marshall University, West Virginia. Also, personal contacts were made at two graduate-level classes and the library to ask for participation. If they agreed to participate, they were asked to complete a demographic questionnaire and the PEPS under supervision of the researcher.

Instrumentation

In this study, the quantitative data of the Productivity Environmental Preference Survey (PEPS) was used to assess an effective language learning environment. According to Gordon and Yocke (2005), the PEPS was employed to identify the variables that describe the way individuals prefer to learn or work in each of the areas. Thus, the responses to those items were analyzed through correlations of variables, which identified as principle factors with other considerable factors in the score of 20 areas. The standard score ranges from 20 to 80 with a mean of 50 and a standard deviation of 10.

In addition, the demographic information from respondents were collected in order to describe the relationship among those principle factors from the PEPS and essential independent variables from the respondents' background knowledge; such as, gender, age, major, learning experience, and country of origin. This effectiveness of learning environment was determined by comparing the result of the two data analyses: first comparison was conducted between the L-B ESL students at language-based instructional learning environment and the C-B ESL students at content-based instructional learning environment; and, second comparison was carried out between the L-B ESL students and their ESL teachers. Price (1996) indicated that individuals having a standard score of 40 or less, or 60 or more find that variable important when they study or work. Individuals having scores that fall between 40 and 60 are questioned with respect to how much that variable is important to them. As for the reliabilities of PEPS, Gordon and Yocke (2005) indicate:

> Ninety percent of the reliabilities (See Table I) are equal to or greater than .60. The area with the highest include: sound, light, temperature, design, motivation, persistence, responsible (conforming), structure, learning alone/peer oriented, several ways, auditory, visual, kinesthetic, intake, learning/working in evening/morning, late morning, afternoon, and mobility. The areas with low reliabilities include authority figures present and tactile preferences (p.7).

The instrument was assessed and revised with a panel of experts and the researcher for content validity (See Appendix C).

Design

The Productivity Environmental Preference Survey (PEPS) is a Likert-type items survey. The 100 questions were answered on a Likert scale with responses ranging from strongly agree to strongly disagree. The estimated time to complete the PEPS is 20 to 30 minutes. There were three types of samples in this survey with a total of 117 participants: first sample of 58 ESL students was from L-B instructional ESL setting; second sample of 48 students was from C-B ESL setting; consequently, the last sample was from 11 ESL teachers at Marshall University. These samples were tested and collected during the fourth week of September, 2008.

Data Collection

In fall of 2008, during the fourth week of September, the Productivity Environmental Preference Survey (PEPS) was administered to both L-B and C-B ESL students at Marshall University. In addition to the PEPS, the researcher developed a questionnaire to assess participants' background data of the students such as: country of origin, learning experience, and learning experience abroad other than the United States.

It should be noted that there was a limitation in collecting appropriate sample for this study; therefore, this study assigned only 106 students available for participation only at Marshall University, West Virginia. At the same time, the PEPS was administered to ESL instructors only in Marshall University, West Virginia.

Data Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS Version 16.0 for Windows). Descriptive statistics were used to describe the distribution of the demographic data. With the analysis of variables relationship, researchers can identify generalizable attributes to understand present conditions (McCaskey, 2007). Correlation coefficients were interpreted using Davis's (1971) descriptors (negligible = .00 to .09; low = .10 to .29; moderate = .30 to .49; substantial = .50 to .69; very strong = .70 to 1.00) (as cited in Gordon and Yocke, 2005). Thus, appropriate data analyses were conducted with selected variables and the profiles of learning style preferences.

CHAPTER IV
FINDINGS

For a better understanding of respondents' background in relation to the results, descriptive statistics were used to describe the distribution of the demographic data. Results from the PEPS were explained according to each group of respondents. Correlations among five independent variables (gender, age, major, group, and country of origin) and selected 21 dependent variables (variables based on environmental, emotional, social, and physical stimuli) from the PEPS were analyzed by both 1-tailed and 2-tailed analyses in order to determine possible relationships among the variables.

Selected Characteristics of Respondents

There were 117 respondents in this survey (See Table 1: Appendix A). The respondents were divided into three categories for the study: 58 language-based ESL students (L-B students) or 49.6%, 48 content-based ESL students (C-B students) or 41%, and 11 ESL teachers or 11%.

Gender

The respondents were 48.3% female and 51.7% male in language-based ESL setting(L-B setting) and 72.9% female and 27.1% male in content-based ESL setting (C-B setting). Overall ESL students were 59.4% female and 40.6% male (See Table 2, 3, and 4: Appendix A).

Age

In terms of age, the respondents were classified into three categories: 1) group of respondents under 20 years of age; 2) group of respondents 20 years of age ≤ 30 years of age; and 3) group of respondents over 30 years of age.

In the L-B setting, the respondents in category one were seven (12.1%), category two

consisted of 49 (84.5%), category three were one (1.7%), and one (1.7%) was unknown (See Table 5: Appendix A). In C-B setting, the respondents in category one were one (2.1%), category two consisted of 34 (70.8%), category three were nine (18.8%), and four (8.3%) were unknown (See Table 6: Appendix A). Overall, eight (7.5%) were in category one, 83 (78.3%) were in category two, 10 (9.4%) were in the category three, and five (4.7%) were unknown (See Table 7: Appendix A).

Major

In L-B setting, 43.1% of ESL students were *business administration majors*, 19% were majoring in the *sciences*, 22.4% were *liberal arts majors*, and 15.5% were majoring in extensive fields (See Table 8: Appendix A). In C-B setting, 75% of ESL students were majoring in *liberal arts*, 12.5% were majoring in *sciences*, 6.2% were majoring in *business administration*, and 6.2% were majoring in other fields (See Table 9: Appendix A). Overall, 46.2% of ESL students were *liberal arts majors*, 16% of them were majoring in *sciences*, 26.4% were majoring in *business administration*, and 11.3% were majoring in other fields (See Table 10: Appendix A).

Learning Experience

In L-B setting, 81% of ESL students had been studying English more than four years as a mandatory subject in their own countries, 8% of them had been studying English less than one year, 7% of them had been studying English less than two years, 2% of them had been studying English less than three and four years, respectively (See Table 11). In C-B setting, 88% of ESL students had been studying English more than four years in their own countries. In L-B setting, 6% of them had been studying English less than three years, 2% had not studied English for more than one or two years. Overall, 84% of ESL students had been studying English more than four years, 6% had been studying it less than one year, 5% had been studying it less than two

years, 4% had been studying it less than three years, and 1% had been studying it less than four years.

International Experience

Twelve percent of ESL students in L-B setting had studied English abroad other than the United States in comparison to 17% of them in C-B setting. Overall, there were 14% of ESL students who had learned English in foreign countries other than the United States. These foreign destinations for learning English included England, New Zealand, Australia, Canada, Ireland, the United Kingdom and Hong Kong (See Table 11).

Table 11: Descriptions of ESL Students at Marshall University by Leaning Experience

Description by Learning Experience	**L-B**	*f*	**C-B**	*f*
Never	**0**	**0%**	**1**	**2%**
6mth< 1yr	**5**	**8%**	**1**	**2%**
1yr< 2yrs	**4**	**7%**	**1**	**2%**
2yrs<3yrs	**1**	**2%**	**3**	**6%**
3yrs< 4yrs	**1**	**2%**	**0**	**0%**
Over 4yrs	**47**	**81%**	**42**	**88%**
Int. Exp.	**7**	**12%**	**8**	**17%**
Total	**58**	**100%**	**48**	**100%**

Destination for International Experience: England, New Zealand, Australia, Canada, Ireland, the United Kingdom, Hong Kong

Country of Origin

In the study, countries were classified into five continents (North America, South America, Africa, Europe, and Asia) by their geographical criteria according to the United Nations Statistics Division (2008). Therefore, controversial countries such as Russia, Turkey, Cyprus, Saudi Arabia, Syria, and Iraq are classified as an Asian Continent in this study, although these are the countries that span more than one continent.

In L-B setting, 93.1% of ESL students were from the Asian continent, 3.4% were from the African continent, and 1.7% were from the South American or European continent, respectively (See Table 12: Appendix A). In C-B setting, 75% of ESL students were from the Asian continent, 10.4% were from the African continent, 6.2% were from the South American or European continent, and 2.1% were from the North American continent (See Table 13: Appendix A). Overall, 84.9% of ESL students were from the Asian continent, 6.6% were from the African continent, 3.8% were from the South American or European continent, and 0.9% were from the North American continent (See Figure 1;) [Appendix A: Table 14].

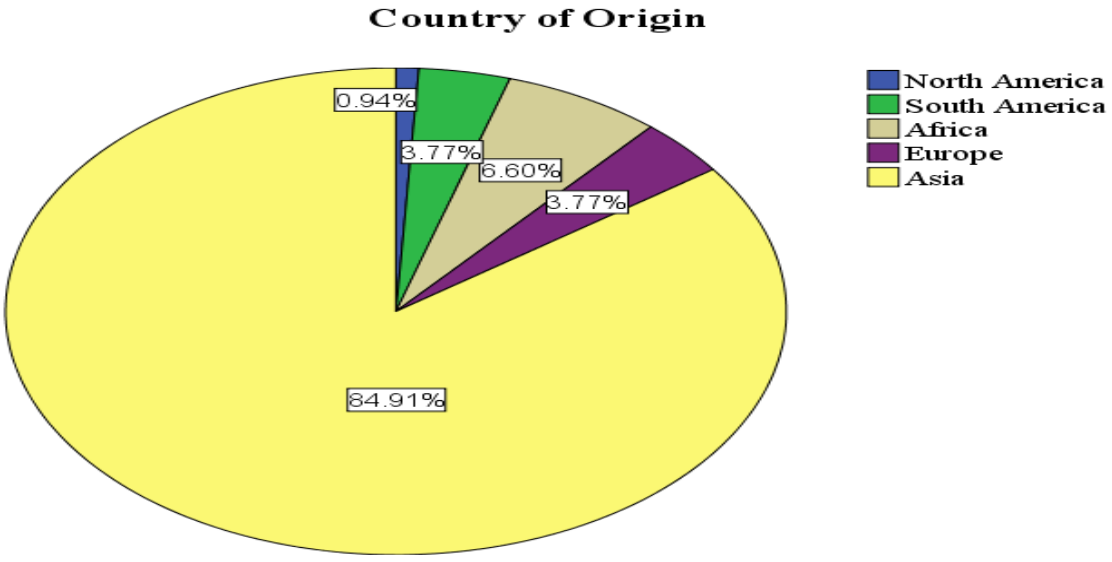

Figure 1: ESL Students' Country of Origin

Productivity and Learning Style Preferences of ESL students in L-B Setting

The data in Table 15 indicated that L-B ESL students with a standard score of 60 (or more), preferred structure, presence of authority figures, peer oriented mode of learning, required appropriate light and temperature in classroom, preferred more auditory and mobile activities, and preferred to learning in the late morning or afternoon.

L-B ESL students with a standard score of 40 (or less), reported less than ideal preferences for responsible, self-motivated, or shifting mode of learning, showed less preferences in visual and need for intake during a class, and were less likely to have optimum productivity and learning in mornings or evenings (See Table 15).

Table 15:
Productivity and Learning Style Preferences of Language-based ESL Students (n=58)

Area	Subscale	Responses	Percentage
Summary for Respondents: Score ≥ 60			
Structure	8	41	70.6
Afternoon	19	27	46.5
Authority Figures Present	10	24	41.3
Learn Alone/Peer Oriented	9	20	34.4
Tactile	14	15	25.8
Light	2	12	20.6
Temperature	3	10	17.2
Auditory	12	10	17.2
Late Morning	18	10	17.2
Noise Level	1	7	12.0
Needs Mobility	20	6	10.3
Summary for Respondents: Score ≤ 40			
Responsible	7	36	62.0
Evening-Morning	17	19	32.7
Learn in Several Ways	11	18	31.0
Late Morning	18	18	31.0
Motivation	5	9	15.5
Visual	13	8	13.7
Requires Intake	16	8	13.7
Note. Only subscales with responses of ten percentage and above were reported.			

Productivity and Learning Style Preferences of ESL students in C-B Setting

The Data shown in Table 16 showed that C-B ESL students with a standard score of 60 (or more), had a preference for tactile, auditory, mobile, visual, motivated, peer-oriented mode of learning, preferred to have presence of authority figures, appropriate temperature, light, noise level, and intakes in classroom, and preferred to learn in the late morning or the afternoon. Sixty-four point five (64.5) percent of the respondents indicated a preference for structure.

C-B ESL students with a standard score of 40 (or less), showed less preference in responsible and persistent type of learning, were not influenced by learning in several ways, visual and tactile mode, and temperature, and learning in the evening and morning.

Table 16: Productivity and Learning Style Preferences of C-B ESL Students (n=48)

Area	Subscale	Responses	Percentage
Summary for Respondents: Score ≥ 60			
Structure	8	31	64.5
Afternoon	19	18	37.5
Tactile	14	17	35.4
Authority Figures Present	10	15	31.2
Auditory	12	13	27.0
Temperature	3	10	20.8
Learn Peer-Oriented	9	9	18.7
Light	2	8	16.6
Motivation	5	8	16.6
Late Morning	18	8	16.6
Needs Mobility	20	7	14.5
Noise Level	1	5	10.4
Visual	13	5	10.4
Requires Intake	16	5	10.4
Summary for Respondents: Score ≤ 40			
Responsible	7	22	45.8
Evening-Morning	17	17	35.4
Late-Morning	18	11	22.9
Learn in Several Ways	11	10	20.8
Visual	13	6	12.5
Temperature	3	5	10.4
Persistent	6	5	10.4
Tactile	14	5	10.4
Note. Only subscales with responses of ten percentage and above were reported.			

Productivity and Learning Style Preferences of ESL Teachers

Table 17 reported that ESL teachers with a standard score of 60 (or more), preferred to learn with peers in a structured learning mode, were likely to have optimum productivity and learning with multi-sensing activities such as tactile, motivated, auditory, visual, kinesthetic ones, required appropriate noise, presence of authority figures, and intakes, and preferred to learning in the afternoon.

ESL teachers with a standard score of 40 (or less), indicated that they were not influenced by visual and light modality, and less preference in responsible tasks.

Table 17:
Productivity and Learning Style Preferences of ESL Teachers at Marshall University (n=11)

Area	Subscale	Responses	Percentage
Summary for Respondents: Score ≥ 60			
Learn Alone/Peer Oriented	9	5	45.4
Structure	8	4	36.3
Tactile	14	3	27.2
Requires Intake	16	3	27.2
Afternoon	19	3	27.2
Noise Level	1	2	18.1
Motivation	5	2	18.1
Authority Figures Present	10	2	18.1
Auditory	12	2	18.1
Visual	13	2	18.1
Kinesthetic	15	2	18.1
Summary for Respondents: Score ≤ 40			
Light	2	2	18.1
Responsible	2	2	18.1
Visual	13	2	18.1
Note. Only subscales with responses of ten percentage and above were reported.			

Comparisons between Productivity and Learning Style Preferences of ESL teachers and ESL students in L-B setting

Tables 18 and 19 are the comparative data between ESL teachers and ESL students in language-based learning setting. Table 18 indicated that both ESL teachers and students with a standard score of 60 (or more), had a preference for "structure," "tactile," "learning alone/peer oriented," "afternoon," "noise level," "authority figures present," and "auditory."

Commonalities existed between ESL teachers and students with a standard score of 40 (or less) on the following subscales: responsible and visual modality (see Table 19).

Table 18: Comparison of Productivity and Learning Style Preferences between ESL Teachers and ESL Students in a Language-based Learning Setting (n=69)

ESL Students			
Standard Score ≥ 60			
Area	Subscale	Responses	Percentage
Structure	8	41	70.6
Afternoon	19	27	46.5
Authority Figures Present	10	24	41.3
Learn Alone/Peer Oriented	9	20	34.4
Tactile	14	15	25.8
Light	2	12	20.6
Temperature	3	10	17.2
Auditory	12	10	17.2
Late Morning	18	10	17.2
Noise Level	1	7	12.0
Needs Mobility	20	6	10.3
ESL Teachers			
Learn Alone/Peer Oriented	9	5	45.4
Structure	8	4	36.3
Tactile	14	3	27.2
Requires Intake	16	3	27.2
Afternoon	19	3	27.2
Noise Level	1	2	18.1
Motivation	5	2	18.1
Authority Figures Present	10	2	18.1
Auditory	12	2	18.1
Visual	13	2	18.1
Kinesthetic	15	2	18.1
Note. Only subscales with responses of ten percentage and above were reported.			

Table 19: Comparison of Productivity and Learning Style Preferences between ESL Teachers and ESL Students in a Language-based Learning Setting (n=69)

ESL Students			
Summary for Respondents: Score ≤ 40			
Responsible	7	36	62.0
Evening-Morning	17	19	32.7
Learn in Several Ways	11	18	31.0
Late Morning	18	18	31.0
Motivation	5	9	15.5
Visual	13	8	13.7
Requires Intake	16	8	13.7
ESL Teachers			
Light	2	2	18.1
Responsible	7	2	18.1
Visual	13	2	18.1
Note. Only subscales with responses of ten percentage and above were reported.			

Relationships between Independent Variables and Selected Preferences

The relationship between independent variables and selected productivity/learning style preferences are illustrated in Table 20 (Appendix B). Negligible variables of $r^2 < 0.05$ were removed from the analysis in reference to combined data analyses of 2-tailed and 1-tailed analyses (Davis, 1971). Nevertheless, the only significant coefficient variables; such as temperature (r= .195, r^2= .038) and auditory (r= -.199, r^2= .040), were considered as important variables in this study. Table 21 indicates both effective and ineffective variables in this study. (See Appendix B). Table 21 indicates 2-tailed analysis and Table 22 indicates 1-tailed analysis.

Table 23 (Appendix B) illustrates gender had a low and significant correlation with temperature (r= .195, r^2= .038). The impact of age was also a low and significant correlation with auditory (r= -.199, r^2= .040). These results showed that gender and age were not statistically significant in terms of their overall learning style preference scores in this study. Nevertheless, the distribution of respondents' gender and age should be taken into consideration (See Table 24: Appendix B).

Respondents' group accounted for the strongest correlation coefficient on the motivation (r= .342, r^2= .117). It also had a low and significant correlation with responsible (r= .299, r^2= .089), learn in several ways (r= .206, r^2= .042), kinesthetic (r= .266, r^2= .070), and requires intake (r= .257, r^2= .066), respectively. Thus, the correlation with group and motivation was considered substantial and significant. The effect of major was a low and significant coefficient with requires intake (r= -.233, r^2= .054). Country of origin showed a low and significant coefficient with structure (r= .289, r^2= .084) (See Table 25).

Table 25: Selected Data of Data correlations Between Independent Variables and Selected Productivity/Learning Style Subscales (N=117)

		X1	X2	X3	X4	X5	Y1	Y2	Y3	Y4	Y5	Y6	Y7
X1	Gender	1.000	.024	.305****	-.246****	-.095	.195**	-.040	.081	.061	.038	.094	-.023
X2	Age		1.000	.238****	-.138	-.095	.092	.126	.070	.041	-.199**	.042	-.040
X3	Groups			1.000	-.537****	-.570****	-.025	.342****	.299****	-.121	-.067	.266****	.257****
X4	Major				1.000	.262****	.062	-.168*	-.120	.104	.100	-.131	-.223***
X5	Country of Origin					1.000	.093	-.186**	-.114	.289****	.036	-.018	-.197**
Y1	temperature						1.000	-.027	.052	.125	-.199**	-.081	-.035
Y2	Motivation							1.000	.400****	.105	.299****	.519****	.188**
Y3	Responsible								1.000	-.101	-.092	.113	-.098
Y4	Structure									1.000	.189**	.164*	-.010
Y5	Auditory										1.000	.369****	.111
Y6	Kinesthetic											1.000	.134
Y7	Requires Intake												1.000

Note: ****Correlation is significant at 0.01 level (2 tailed)
*** Correlation is significant at 0.01 level (1 tailed)
** Correlation is significant at 0.05 level (2 tailed)
* Correlation is significant at 0.05level (1 tailed)

CHAPTER V
DISCUSSION, CONCLUSIONS, and IMPLICATIONS

In this study, 117 respondents' learning styles were assessed in three groups (language-based ESL students: L-B ESL students, content-based ESL students: C-B ESL students, and ESL teachers) in terms of gender, age, major, group, and country of origin. Those variables were believed to hold potentials for educators to understand and facilitate learning processes of diverse ESL learners in consideration of respondents' extensive backgrounds. Therefore, respondents' demographic descriptions were illustrated first in order to depict more evocative assumptions of their learning style preference in relation to the results.

Demographic Descriptions

Gender

Among 117 respondents, there were almost equalized female and male numbers in L-B ESL students. On the other hand, there were unbalanced ones in both C-B ESL students (72.9% female and 27.1% male) and overall ESL students (62.4% female and 37.6% male). Willcoxson and Prosser (1996) suggested that "since educational specialization and career choices often interact with gender differences, making it difficult to sort out how much variance in LSI scores can be attributed to gender alone and how much is a function of one's educational background and career" (Sahin, 2008, p.129). Thus, these respondents' unequal portions were carefully taken into consideration with other considerable variables.

Age

In L-B ESL setting, the majority of students (84.5%) were categorized in a group of 20 years of age≤ 30 years of age, which was larger portion than C -B's 70.8%. More L-B students (12.1%) were under 20 years of age in comparison to C-B's 2.1%. In contrast, fewer L-B

students (1.7%) were over 30 years of age comparing to C-B's 18.8%.

Overall, largest population of 78.3% was a group of 20 years of age30 years of age, followed by 9.4% of a group of over 30 years of age and 7.5% of a group of under 20 years of age. This showed that there were possible biased results in response to the respondents' uneven portions in this study.

Major

The findings showed that there were more alternating responses for major choices among ESL students. Popular majors in L-B were *business administration* (43.1%), *sciences* (19%), *liberal arts* (22.4%), and *others* (15.5%). In contrast, popular majors in C-B were *liberal arts* (75%), *sciences* (12.5%), *business administration* (6.2%), and *others* (6.2%). Overall, *liberal arts* (46.2%), *business administration* (26.4%), *science* (16%), and *others* (11.3%) were the ESL students' descriptions by major. This suggested that reflection of the dominant major "*liberal arts"* should be thought as an influential factor.

Country of Origin

Likewise other factors, the country of origin would explain more about respondents' characteristics in terms of diverse cultural backgrounds. As the result showed, 84.91% ESL students were from Asian continents, followed by 6.60% of Africa, 3.77% of South America and Europe and 0.94% of North America, respectively.

This dominant population indicated the cultural study of Asian continents would help educators expand more effective learning opportunities for ESL students at Marshall University. Also, the cultural review of African and European continents would aid both educators and students to provide an opportunity to experience a new way of learning.

Learning Experience and International Experience

The result showed 84% of ESL students had more than four-year English learning experience. As students' learning experience of English was supposed to provide more information about types of language instruction they had before, this large number of ESL students' learning experience in their native country was significant. Consequently, the instructional backgrounds of students' country of origin should be included in order to ponder the trend of learning style preference of ESL students.

In addition, the result also indicated that 14% of overall ESL students had international experience in order to study English other than the United States. Since the international experience would provide more various opportunities for students to undergo different instructional environments, this external factor should be considered in further exploration.

Comparison between Productivity and Learning Style Preferences of ESL Learners in L-B and C-B Learning Environment

Following data were considerable findings in the comparison between learning styles in two learning settings:

Language-based ESL Students (L-B ESL Students)

The high score over 60 in learning style preferences in L-B ESL students indicated that they were likely to perform at their optimal level in the afternoon, within a structured and peer-oriented learning environment with an authority figures presence. These findings suggested that L-B ESL students (with a standard score of 60 or more) would be able to maximize their learning and productivity through emotional and sociological elements.

It appeared by the low score less than 40 that L-B ESL students were less likely to produce a better outcome in a responsible and nontraditional learning setting, especially in the morning time. The contradicting preference of learning in the late morning should be concerned among L-B ESL students.

Content-based ESL Students (C-B ESL Students)

The high score over 60 in C-B ESL students showed the similar result in the way they preferred to learn in a structured learning environment with more tactile and auditory activities and an authority figures presence. These demonstrated that C-B ESL students (with a standard score of 60 or more) would tend to obtain benefits from every elements of learning environment. That is, C-B ESL students were more adaptable in using these various modalities to learn.

The low score less than 40 provided coincidental preference with L-B students: C-B students were not influenced by a responsible and nontraditional ways of learning, especially in the morning. These results pointed out contradicted preferences in tactile, visual and

temperature needs, and learning in the late morning among C-B ESL students.

These results demonstrated that both L-B and C-B ESL students preferred externally-based stimuli like “structure” and “presence of authority figures,” but they were not likely to get influenced by internally-based stimuli like “responsible” and “learn in several ways.” Thus, it was suggested that ESL students at both academic levels needed relatively stable ways of learning in order to reduce the anxiety of learning in a second language. The brain research also supported that all students need “a safe and supportive environment in which to learn” with the consideration of the efficient neocortex operation (Violand-Sánchez, 1998, p.28). Put another way, ESL students tended to learn better in a supportive learning atmosphere. Wo (2003) explained that the influential environmental variables on language learning started from a predictable learning environment (as cited in Dörnyei, 2005). He also mentioned that emphasizing self-improvement by providing moderately challenging tasks with necessary instructional support and feedback would enhance students’ intrinsic motivation to learn.

In addition, these two different levels of ESL students showed differences in the preferred incentives in their learning styles. Interestingly, the varieties of learning style preference, especially the preference for physiological stimulus, coincided with the preference of C-B students. From this point of view, it can be said that the higher educational level the ESL students study, the more they extend the physiological learning styles. Specifically, L-B students were likely to depend more on sociological stimulus in learning, while C-B students were more likely to make use of their physiological stimulus in learning. Thies (1979, 1999-2000) suggested the sociological elements were also developmental so that they have the possibility to “change over time in predictable patterns,” while “the emotional elements are developmental except the biologically imposed Persistence” (Mangino, 2004, p.5-6). These facts demonstrated that L-B

students tended to be affected by external factors which educators can control in the learning environment, while C-B students tended to be affected by internal needs which the learners themselves could take initiatives in learning. In other words, ESL teachers should integrate a range of learning style preferences into creating learning environments as to the students' levels of study; if possible, the stimulus of learning style should be gradually transformed from sociological elements to physiological ones. That is, the instructional role of ESL educators was influential especially for the L-B ESL students. Also, it was presumed that these emotional and sociological factors affect the quality of learning style preferences.

Comparison between Productivity and Learning Style Preferences of ESL Teachers and Students

This comparison showed that several commonalities and differences between ESL students and teachers were significant for understanding learning style preference of diverse respondents. In order to discuss these results specifically, productivity and learning style preferences of ESL teachers were given below:

ESL teachers

The high score over 60 in ESL teachers displayed that they also preferred to learn in a structured and peer-oriented modes of learning in the afternoon with adequate intakes. They also showed wide-ranged varieties of teaching and learning as their learning preferences: such as, tactile, noisy, auditory, visual, and kinesthetic types of learning.

The low score less than 40 presented that they had not so many dislikes in their learning style preferences. They were less likely to perform in dim light and visual aids with their own responsibility. This demonstrated ESL teachers were more adjustable in terms of their preferred ways of learning styles. This result would be considered due to their rich learning experiences and types of occupations as an educator. The contradicting preference of visual need among ESL teachers was considered due to the small population in sampling.

Several commonalities from the results of standard score over 60 showed that majority of ESL students and teachers preferred to learn in the afternoon, produced better outcomes in a structured and peer-oriented learning environment. The relatively higher preference for the afternoon indicated that they would “take advantage of the strongest segment of the time energy curve for the afternoon” (Price, 1996, p.11). The probable reason for this preference could be

speculated from the students' original time energy curve in their own native country. That is, one possible fact for this matter would be caused by the habit of time perception of their native country in opposed to the United States one. This indicated that the adjusting time for newly ESL students was essential for providing an effective learning opportunity.

In the view of the structured and peer-oriented learning environment, Price (1996) suggested that they would learn better in pair or team with more precise instructions in terms of selected options, clear objectives, and brief explanations about requirements. ESL teachers may gain maximum outcome by creating more opportunities for pair or group works in accordance with precise directions. Also, scheduling more passive types of class (reading, listening, and vocabulary) should be placed in the afternoon period in order to make students more concentrated on their works. There were little differences in their learning style preferences over 60 in terms of the needs of light and temperature of ESL students and the needs of intake and motivation of ESL teachers.

On the other hand, the commonality in standard score less than 40 indicates that ESL students and teachers were less likely to perform better with responsibility and visual aids. The reason of this issue could be speculated as to the requirement of mental efforts in learning process: the external emotional factor of "structure" required less mental efforts from the students, while the internal emotional factor of "responsibility" required more mental efforts from them (Thies, 1979, 1999-2000; Mangino, 2004). There were several differences in their non-preferences: although ESL teachers were not influenced just by dim light, ESL students had less preference in learning in the morning with untraditional mode of learning.

According to Fazarro and Martin (2004), the flexible learning styles were better for learners to possess, because "dominant learning styles preferences that may not be suitable in all

learning environments." Therefore, the less learning preferences of ESL teachers compared to that of ESL students indicated that the flexibilities of learning preferences could be developed through more varieties of learning and teaching experiences. Reid et al (1998) also indicated the successful learners or experienced learners tended to take control of their multiple learning styles. Thus, these fewer numbers of unproductive learning preferences of ESL teachers were role models for learners to develop flexibility in their learning styles. From these different directions in learning preferences, ESL teachers could introduce more various ways of learning styles in relation to the internal needs of learners. That is, the more the students reflect themselves in learning process, the more they would be able to develop self-awareness in developing their learning styles.

Relationships between Independent Variables and Selected Productivity/Learning Style Subscales

One of the five independent variables were "gender" that showed a low and significant positive correlation with "temperature" (r= .195, r^2= .038). The environmental element, Temperature, would become "critical for functioning effectively" that they are easily distracted by their un-functioned biological preferences (Dunn, Thies, & Honigsfeld, 2001; Mangino, p.5). Considering this issue as preferences should be vital for the learners that ESL teachers should prepare alternative options for students to learn in the same place. The table below indicated that there were 21 respondents (17.94%) who scored higher than 60 on the temperature subscale. Notably, 76.2% in the 21 respondents were preferred by female. This result indicated that the perceptual preference among male and female were different. Especially, female would prefer "adequate warmth, enclosures, screens, supplemental heaters and placement in warmer areas; allow sweaters; suggest use of warm colors and textured materials" (Price, 1996, p.7). This result partially coincided with the study of Lam-Phoon (1986) as to female's preference on the warmer environment (Price, 1996, p.23). Nonetheless, the distribution of respondents' gender in this correlation analysis (37.6% were male and 62.4% were female) should be considered here for more valid description of the gender difference (See Table 24). That is, it was possible to surmise that this result would have been affected by the uneven percentage of gender. Thus, this validity should be studied in the further research.

The impact of age was also a low and significant negative correlation with "auditory" (r= -.199, r^2= .040). One of the three age categories, respondents who were under 20 year-old, indicated that 37.5% were scored 58 on the subscale. The second age category, respondents 20 year-old ≤ 30 year-old, showed 40.7% were scored between 52 and 58 on the subscale. The third age category, respondents over 30 year-old displayed 23.5% were scored 41 on the subscale.

Price (1996) recommended for learners who scored almost 60, learners younger than 30, to "use tapes, videotapes, records, radio, television, and precise oral directions when giving assignments, setting tasks, reviewing progress, using resources or for any aspect of the task requiring understanding, performance, progress, or evaluation" (p.10). On the other hand, it was recommended for learners who are over 30 to "use resources under the perceptual preferences that are strong" such as "computers, videotapes, sound filmstrips, television, and tactual/kinesthetic materials" or to "read and take note before listening to lecture or audio management resources" (p.10). Thus, alternative options as to the learners' age should be recommended by teachers.

Likewise "gender" as independent variable, the independent variable "age" also had unbalanced percentages in respondents: 73.5% of respondents were 20 year of age ≤ 30 year of age. This fact would bring a biased result in terms of the variance of "age," so that it should be examined again in the further study. As two of the independent variables (gender and age) had a relatively low score on the result, this study should be further analyzed the relationship with other three independent variables (groups, major, and country of origin) with learning style preferences. The other three of the independent variables (groups, major and country of origin) accounted for significant and positive relationships with the "motivation" subscale. The group summary of each respondents indicated 16.6% and 18.1% of the variance on the motivation subscale were associated with the C-B ESL students and the ESL teachers who had obtained a standard score of 60 or more, respectively. In contrast, the summary also showed considerably low variance (1.72%) on the same subscale related with the L-B ESL students. According to Price (1996), this result showed that the C-B ESL students and the ESL teachers preferred to use "self-designed objectives, procedures and evaluation before the instructor or supervisor assesses

effort; permit self pacing and rapid achievement" (p.8). In contrast, L-B ESL students preferred more "short-term, simple, uncomplicated assignments that require frequent discussions with the instructor or supervisor; provide several easily understood options based on the individual's interests; experiment with short-range motivators and reinforcement; solicit self-developed goals and procedures; log results and progress; provide opportunities for success and achievement on cooperatively-designed objectives" (Price, 1996, p.8). This significant difference in student learning motivation among the groups should be taken into consideration in terms of the different educational backgrounds, goals, and responsibilities among groups of respondents.

In this way, correlations between learning style preferences and selected variables indicated comparable results with the previous comparisons. In terms of the independent variable "groups" in relation with other variances, it also had a low and significant positive correlation with the "responsible" subscale in the group summary: the data indicated that respondents who scored less than 40 were following: 62% for L-B students; 45.8% for C-B students; and 18.1% for ESL teachers. Price (1996) suggested that for standard score of 40 or less:

> "design short-term, limited assignments, with only single or dual goals; provide acceptable options and frequent checking by the instructor or supervisor; directions should be simple and responsible colleagues should be placed in the immediate environment and on the same projects. Base assignments on interests and use interim praise or rewards during the successful completion of tasks and objectives. Explain why the tasks are important and speak collegially rather than authoritatively" (p.8).

That is, the most significant correlations was the relationship between "the levels of groups" and "motivation." Mangino (2004) pointed out that "Motivation is concerned with whether or not a person is internally versus externally motivated, whereas Responsibility is denoted by whether a person is conforming or nonconforming, and Structure referred to

individuals' needs for internal versus external direction" (p.5). In other words, the motivational factors seemed to affect the learners differently in respond to their level of study. Dunn and Dunn (1978) suggested that unmotivated students should be given short assignments and resources that complement their perceptual strengths (p.8). They needed more supplemental aids to help positively complete their tasks in their own preferable ways. Also, they needed to promote "more positive self-image, motivation, and behavior through personal success" (p.9). Thus, teachers' positive encouragement by giving students more opportunities to make choices, learn at their favorite ways, participate in peer-oriented studies, or self- or peer-test and evaluate themselves were useful especially for L-B learners (Dunn and Dunn, 1978).

These results produced similar results from the comparative research of undergraduates by the levels of students and their productivity style (Dunn, Dunn, & Price, 1986). They found a significant difference on "responsibility" by concluding "the higher the grade, the more responsible" (p.20). Noel (2001b) proposed that students' attitudes were strongly related to self-determined forms of motivation, namely, it was interrelated with regulation and intrinsic motivation (as cited in Dörnyei, 2005). This suggested that the academic levels were closely related to students' intrinsic motivation. ESL educators should encourage students' self-motivated learning by providing sufficient instruction in accordance with their academic levels. That is, the students' educational status seems to affect how they preferred to study in terms of their individual needs. In consideration with the positive learning experiences, it could be concluded that the more they learned in a professional field, the more they were likely to be motivated.

The independent variable "major" was a low and negative significant coefficient with "requirement of intake" ($r= -.233$, $r^2= .054$). The variance of liberal arts (34.9%) were ranged

from 47 to 50 (Mean= 50.75), that of sciences (52.9%) were ranged from 50 to 54 (Mean= 50.76), that of business administration (53.6%) were ranged from 45 to 50 (46.96), and that of others (Mean= 41.7%) were ranged from 43 to 47 (Mean= 46.75). These results indicated that respondents who were majoring liberal arts and sciences would need "more frequent opportunities for nutritious food breaks, food at work station, beverages at desk," while respondents from business administration and others required less special arrangements for intakes (Price, 1996, p.11).

The last independent variable "country of origin" had a low and significant coefficient with "structure" (r= .289, r^2= .084). The variance of North America showed 33.3% of respondents' score were 44 (Mean= 54.2), that of South America showed 50% of score were 50 (Mean= 56.75), that of Africa showed 28.6% of score were 54 (Mean= 60), that of Europe showed 33.3% of score were either 54 or 64 (Mean= 58.83), and that of Asia showed 31.9% of score were 64 (Mean= 61.41), specifically, 71.5% of respondents from Asia indicated the score more than 60. Although the fact that 77.8% of respondents were from the Asian continent, this significant result from Asian respondents' learning preferences of "structure" was coincident with the previous research (Kinsella & Sherak, 1998). Ting-Toomey (1999) described that the distinctive behavioral patterns in East Asian cultures (China, Hong Kong, Taiwan, Japan, South Korea, Singapore, Brazil, and Thailand) were related to the Confucian Dynamism. This was characterized by its long-term orientation: such as, social order, hierarchical respect, collective face-saving, long-term planning and outcomes, and thrift centered (p.74). The characteristics of the Confucian idea appeared to be interrelated with the students' learning preferences of "structure" and "peer-oriented learning." Therefore, based on these preferable learning styles of ESL students from the Asian continent, "structure" should be encouraged in order to expand the

Asian students' learning styles.

In sum, the results of this analyses showed that ESL learners were more likely to be motivated differently from the level of study and country of origin. In consideration with such characteristic modalities, ESL learning environment and program should be examined and developed to maximize students' potentials to the fullest. In other words, the needs of educational setting should be carefully identified and pondered through each participant's unique Learning Style Inventory (Dunn, Dunn, & Price, 1997).

Summary

These findings showed the importance of self-understanding in learning. The awareness of one's own preferences will not only increase one's strengths but also allow one to realize the importance of trying various ways to learn in order to discover a new self who is developing a flexible learning repertory. In this sense, it is essential for ESL educators to hone flexible instruction taking into account the knowledge of ESL students' learning style preferences that were created by their different cultural and educational backgrounds. Expanding students' selections of learning would help them to be better prepared for further learning and life choices. Therefore, the saying "Teachers teach as they learn" should be changed to "Teachers teach how one learns in various ways" by putting more emphasis on our ever-developing learning styles as to their various life/learning experiences.

CONCLUSIONS

The major purpose of this study was to determine the effect of adult ESL students' learning style preferences in terms of environmental, emotional, sociological, and physical stimuli for creating an effective ESL learning environment. The results demonstrate significant learning style preferences in response to cultural factors and motivational factors. In addition, the analysis of the relationship between learning styles of ESL teachers and students at L-B setting reveal several suggestions for further studies in this field. These findings allow educators to reconsider the nature of language learning in a learner as social being. Thus, ESL educators should be aware of the fact that the students' learning styles are beneficial.

The major findings indicate that the interrelationship between learning styles and the country of origin illustrate that ESL students from the Asian continent tend to achieve a better learning outcome in a structured peer-oriented learning environment. This result is identical to the previous research in terms of the traditional didactic learning environment (Kinsella & Sherak, 1998). However, it is opposed to the research as to group-oriented learning (Cheng & Banya, 1998). It ascertains the importance of previous learning experiences of the students. ESL educators should apply this knowledge to determine how educational policies or systems affect constructing learning preference of ESL students (Reid et al, 1998).

Moreover, the learning style preferences by different learning settings show significant variances in students' motivational factors. The results demonstrate a tendency of upgrading learning styles' qualities from external to internal ones in accordance with academic levels. The more ESL students learn in higher academic levels, the more they are likely to learn with their internally-based learning strategies. Dörnyei (2005) explains that the motivation tends to be affected by self-initiated choice or assigned condition in learning settings. As a result, active

engagement in language learning should be encouraged to enhance students' positive attitude and motivation toward learning.

Furthermore, the comparison of learning styles between ESL teachers and students indicate several commonalities among their learning styles as well as a parallel trend in preferences. They have the corresponded preferences in "structure" and "peer-oriented learning mode," while they show less preference in "responsibility" and "learn in several ways." With these results, it can be inferred that language-based learning environments tend to rely more on social and external factors during learning. In addition, the relatively neutral learning preferences of teachers indicate their flexibility in learning (Reid et al, 1998: and Cheng & Banya, 1998). In other words, the parallel trend of learning style preferences is in its continuum from sociological elements to physiological ones. Usioda (2001) has found that students with positive learning experiences tended to emphasize intrinsic motivational factors regardless of their intentions (as cited in Dörnyei, 2005). Namely, the ESL students tend to learn to adapt their learning styles by external forces such as social settings of the classes and peer-oriented activities in the beginning learning stage. Then, they tend to expand their learning styles by utilizing their internal forces to choose better learning styles for themselves. This idea should be considered in relation to the changing nature of students' motivation in their lifespan (Dörnyei, 2005).

In conclusion, ESL educators can utilize the knowledge of their students' learning style preferences when they create a learning environment. This will help ESL educators not only to provide efficient environments but also to encourage developing students' learning styles based on their original learning style preferences as "their strengths" (Dunn, Griggs, Olson, Beasley, & Gorman, 1995; Mangino, p.4). The information of learning preferences is useful for the learners to explore the possibilities of language learning. In consideration with the effect of cultural factor,

the ESL teachers should encourage examining how differently and similarly people learn in accordance with their educational and cultural backgrounds. This will help them to be aware of their habitual learning styles more objectively so that they can be more flexible adjusting their learning styles as to the situations in the future.

In addition, Dunn and Griggs (2000) proposed that educators can operate the use of learning inventories in response to the actual needs of the students. Melis and Monthienvichienchai (2004) also point out that learning styles provide us "a legitimized means of varying and creating richer teaching materials" out of humanistic view of the learners (p.1387). As a result, ESL educators are recommended to conceive the fuzziness of the learning styles as "a space in which teachers can apply their creative teaching skills" instead of the limit of teaching variety (Melis & Monthienvichienchai, 2004, p.1387). Therefore, the researcher believes that this controversial issue of variable learning style diagnosis should be used as an efficient guide. It would be beneficial for ESL educators to understand human adaptability to create an effective learning environment. These findings are useful implications that allow ESL teachers, teacher educators, educational researchers, and curriculum developers to predict the vital factors in creating a more productive learning environment for their students.

IMPLICATIONS

This study increased the body of knowledge about learning style preference in ESL learning environment. However, further research is required to enhance this area of interest. Based on the findings of this research, the following recommendations are made: (a) further research should be conducted utilizing the PEPS instrument with a diverse population and random sampling, (b) further research should be conducted focusing more on preferable learning style of each country not by the continent, (c) further research should be conducted more with relationship between ESL students' cultural backgrounds and learning styles, (d) further research with more ESL teachers should be conducted to increase generalizability and external validity of relationship between ESL teachers' and students' learning style preferences.

Research can assist in developing future ESL programs with a better learning environment. General information of learning style preferences according with the demographic characteristics should be utilized with more attention. ESL students' acculturation processes and life experience need to be studied more in order to predict more empirical factors in development of learning style preferences.

References

Brown, H. D. (2007). *Principles of language learning and teaching (5th ed.)*. White Plains, NY: Pearson Education.

Cheng, M.H., & Banya, K. (1998). Bridging the gap between teaching and learning styles. In Reid, J. M. (Eds.), *Understanding learning styles in the second language acquisition* (pp.80-84). Upper Saddle River, NJ: Prentice Hall Regents Prentice-Hall, Inc.

Claxton, C.S., & Murrel, P. H. (1987). Learning styles: Implications for improving educational practices. *ASHE-ERIC Higher Education Report No.4.* Washington, D. C.: Association for the Study of Higher Education.

Dembo, M. H., & Howard, K. (2007, Spring). Advice about the use of learning styles: A major myth in education. *Journal of College Reading and Learning, 37(2).*

Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Dunn, R. & Dunn, K. J. (1978). *Teaching students throught their individual learning styles: A practical approach*. Reston, Virginia: Reston Publishing Company Division of Prentice-Hall Publishers, Inc.

Dunn, R., Dunn, K. J., & Price, G. E. (1979-1997). *Productivity Environmental Preference Survey*, Lawrence, KS: Price Systems.

Fazarro, D., & Martin, B. (2004, Fall). Comparison of learning style preferences of agriculture, human sciences, and industrial technology students at a historically black university. *The Workforce Education Forum*. Retrieved February 1, 2008, from http://voc.ed.psu.edu/projects/publications/books/Fall2004/index.html

Florez, M. C. (1998, November). *Current concepts and terms in adult ESL. ERIC Q&A*. Washington, DC: National Clearinghouse for ESL Literacy Education.

Gordon, H. R. D., & Yocke, R. J. (2005, Spring). Analysis of productivity and learning style preferences of beginning and experienced career and technical education teachers in West Virginia. *Workforce Education Forum, 32 (1),* 1-19.

Graf, S., Viola, S. R., Leo, T., & Kinshuk (2007). In-depth analysis of the Felder-Silverman learning style dimensions. *Journal of Research on Technology in Education*, 40(1), 79-93.

Hardwick, J.M. J. (April, 1996). A three year study of motivation (MMI) and learning environment (ILEQ) as per TAAS scores of high, middle, and low performing students. *The American Educational Research Association,* 8-12, New York: NY.

Honigsfeld, A., & Schiering, M. (2004). Diverse approaches to the diversity of learning styles in teacher education. *Educational Psychology, 24 (4),* 487-507.

Keffe, J. W. (1987). *Learning style theory and practice*, Reston, VA: National Association of Secondary Schools Principals.

Kelly, C. (1997, September). David Kolb, the theory of Experiential Learning and ESL. *The Internet TESL Journal, Vol. III (9).* Retrieved February 2, 2008, from http://iteslj.org/Articles/Kelly-Experiential/

Kienzl, G. (2008, January 29). Recent participation in formal learning among working-age adults with different levels of education. *National Center for Education Statistics* (Publication No. NCES2008041). Retrieved February 10, 2008, from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2008041

Kiguwa, P., & Silva, A. (2007). Teaching and learning: Addressing the gap through learning styles. *South African Journal of Psychology, 37(2),* 2007, 354-360.

Kinsella, K., & Sherak, K. (1998). Designing ESL classroom collaboration to accommodate diverse work styles. In Reid, J. M. (Eds.), *Understanding learning styles in the second language acquisition* (pp.85-99). Upper Saddle River, NJ: Prentice Hall Regents Prentice-Hall, Inc.

Lightbown, P. M., & Spada, N. (2006). *How languages are learned (3rd ed.).* Great Clarendon Street, Oxford: Oxford University Press.

Lincoln, F., & Rademacher, B. (2006). Learning styles of ESL students in community colleges. *Community College Journal of Research and Practice*, 30, 485-500.

Mangino, C. (2004). *A Meta-Analysis of Dunn and Dunn Model Correlational Research with Adult Populations*. (ERIC Document Reproduction Service No. ED490575)

Mann, R. L. (2006, Winter). Effective teaching strategies for gifted/learning-disabled students with spatial strength. *The Journal of Secondary Gifted Education, Vol. XVII (2),* 112-121. Waco, TX: Prufrock Press.

Marshall University (2007, Fall ; End-January 10, 2008). *Student data book*. Office of Institutional Research and Planning. Retrieved February 20, 2008, from http://www.marshall.edu/irp/Databook/databook2008.pdf

Marshall University, Intensive English Program. (2008). *L.E.A.P. (Learning English for Academic Purposes).* Retrieved November 20, 2008, from http://www.marshall.edu/leap/en/

McCaskey, S. J. (2007). Social interaction learning styles in on and off campus environments. *Southern Illinois University Carbondale: Online Journal for Workforce Education and Development, 2 (4).* Retrieved February 1, 2008, from http://wed.siu.edu/journal/VolIInum2/Article4.pdf

Melis, E., & Monthienvichienchai, R. (2004). They call it learning style but it's so much more. In G. Richards (Ed.), *Proceedings of World conference on E-Learning in corporate, Government, Healthcare, and Higher Education 2004 (1383-1390).* Chesapeake, VA: AACE.

Mental Measurements Yearbook. (2008, January). Productivity Environmental Preference Survey, 1979-1993 [Accession No. 13091647]. Available from ERLWevSPIRS5 Web site, http://web5.silverplatter.com/webspirs/start.ws?customer=c127651&databases=YB

Mitchell, R., & Myles, F. (2004). *Second language learning theories (2nd ed.).* New York: Oxford University Press Inc.

Myers, B.E., & Dyer, J. E. (2004). The influence of student learning style on critical thinking skill. St. Louis *: American Association for Agricultural Education Annual Conference,* 379-390. Retrieved February 28, 2008, from http://aaae.okstate.edu/proceedings/2004/2004.htm

Nixon, L., Gregson, M., & Spedding, T. (n.d.). Explaining and understanding human behaviour: The case of learning styles and the matter of difference. *Journal of Philosophy of Education*: *Philosophy of Education Society of Great Britain*. Retrieved March 30, 2008, from http://www.philosophy-of-education.org/pdfs/Sunday/Nixon.pdf

Person, N. P. (2001). *Assessment of TOEFL scores and ESL classes as criteria for admission to Adult & Technical Education and other selected Marshall University Graduate Programs*. Unpublished master's thesis, Marshall University, Huntington, West Virginia.

Poskey, R. N., Igo,C. G., Waliczek, T. M., Briers, & Zajicek, J. M. (2005). Assessing learning styles and preparation techniques of secondary students participating in the Texas FFA nursery/landscape career development event. *San Antonio: American Association for Agricultural Education Annual Conference,* 118-131. Retrieved February 28, 2008, from http://aaae.okstate.edu/proceedings/2005/Articles/2005AAAEProceedings.pdf

Price, G. E. (1996). *Productivity environmental preference survey: An inventory for the identification of individuals adult learning style preferences in a working or learning environment*. Lawrence, KS: Price Systems Inc.

Reid, J. M. (1998). *Understanding learning styles in the second language classroom.* Upper Saddle River, NJ: Prentice Hall Regents Prentice-Hall, Inc.

Reid, J., Vicioso, M.V.M., Gedeon, É., Takacs, K., & Korotkikh, Z. (1998). Teachers as perceptual learning styles researchers. In Reid, J. M. (Eds.), *Understanding learning styles in the second language acquisition* (pp.15-26). Upper Saddle River, NJ: Prentice Hall Regents Prentice-Hall, Inc.

Rosenfeld, M., & Rosenfeld, S. (2004). Developing teacher sensitivity to individual learning differences. *Educational Psychology*, 24(4), 465-486.

Sahin, S. (2008, January). The relationship between student characteristics, including learning styles, and their perceptions and satisfaction in web-based courses in higher education. *Turkish Online Journal of Distance Education*. ISSN: 1302-6488, Vol.9 (1), 8.

Saville-Troike, M. (2006). *Introducing second language acquisition*. New York: Cambridge University Press.

Ting-Toomey, S. (1999). *Communicating across cultures*. New York, NY: A Division of Guilford Publications, Inc.

Trede, L.D., & Miller, K.S. (2000). Assessing the learning styles of Iowa farmers. *San Diego: American Association for Agricultural Education Annual Conference,* 338-350. Retrieved February 28, 2008, from http://aaae.okstate.edu/proceedings/2000/index.html

The Organization for Economic Cooperation and Development. (2007). *Education at a glance 2007-home.* Retrieved February 20, 2008, from http://www.oecd.org/document/30/0,3343,en_2825_495609_39251550_1_1_1_1,00.html

The Organization for Economic Cooperation and Development. (2004). *Thematic review on adult learning.* Retrieved February 20, 2008, from http://www.oecd.org/dataoecd/46/49/34467856.pdf

The United Nations Statistics Division. (2008, October 17). *Composition of macro geographical (continental) regions, geographical sub-regions, and selected economic and other groupings*. Retrieved October 20, 2008, from Composition of macro geographical (continental) regions, geographical sub-regions, and selected economic and other groupings

U.S. Department of Education. (2002). *Proceedings of the National Symposium on Adult ESL Research and Practice (Washington, DC, September 4-7, 2001).* Washington, DC: Office of Vocational and Adult Education, National Center for ESL Literacy Education.

U.S. Department of Education. (2008). *Enrollment and participation in the state-administered Adult education program from 2000-2005*. Office of Vocational and Adult Education (OVAE). Retrieved February 27, 2008, from http://www.ed.gov/about/offices/list/ovae/pi/AdultEd/aedatatables.html

Violand-Sánchez, E. (1998). The triune brain and learning: Practical insights for the classroom. In Reid, J. M. (Eds.), *Understanding learning styles in the second language acquisition* (pp.27-33). Upper Saddle River, NJ: Prentice Hall Regents Prentice-Hall, Inc.

Wesche, M. B. (1981). 'Language aptitude measures in streaming, matching students with methods, and diagnosis of learning problems' in K. Diller (ed.): Individual differences and universals in language learning aptitude*. Rowley, MA: Newbury House, pp. 119-39.*

West, C. R., Kahn, J. H., & Nauta, M. M. (2007). Learning styles as predictors of self-efficacy and interest in research: Implications for graduate research training. *Training and Education in Professional Psychology, 1(3),* 174-183.

Appendix A

Table 1: Respondents in Groups

	Frequency	Percent	Valid Percent	Cumulative Percent
Language-based ESL students	58	49.6	49.6	49.6
Content-based ESL students	48	41.0	41.0	90.6
ESL teachers	11	9.4	9.4	100.0
Total	117	100.0	100.0	

Table 2: Gender of L-B ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	30	51.7	51.7	51.7
Female	28	48.3	48.3	100.0
Total	58	100.0	100.0	

Table 3: Gender in C-B ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	13	27.1	27.1	27.1
Female	35	72.9	72.9	100.0
Total	48	100.0	100.0	

Table 4: Gender of ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	43	40.6	40.6	40.6
Female	63	59.4	59.4	100.0
Total	106	100.0	100.0	

Table 5: Age of L-B ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
Unknown	1	1.7	1.7	1.7
Under 20 year-old	7	12.1	12.1	13.8
20 year-old<= 30 year-old	49	84.5	84.5	98.3
Over 30 year-old	1	1.7	1.7	100.0
Total	58	100.0	100.0	

Table 6: Age of C-B ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
Unknown	4	8.3	8.3	8.3
Under 20 year-old	1	2.1	2.1	10.4
20 year-old<= 30 year-old	34	70.8	70.8	81.2
Over 30 year-old	9	18.8	18.8	100.0
Total	48	100.0	100.0	

Table 7: Age of ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
Unknown	5	4.7	4.7	4.7
Under 20 year-old	8	7.5	7.5	12.3
20 year-old<= 30 year-old	83	78.3	78.3	90.6
Over 30 year-old	10	9.4	9.4	100.0
Total	106	100.0	100.0	

Table 8: Major of L-B ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
Liberal Arts	13	22.4	22.4	22.4
Science	11	19.0	19.0	41.4
Business Administration	25	43.1	43.1	84.5
Others	9	15.5	15.5	100.0
Total	58	100.0	100.0	

Table 9: Major of C-B ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
Liberal Arts	36	75.0	75.0	75.0
Science	6	12.5	12.5	87.5
Business Administration	3	6.2	6.2	93.8
Others	3	6.2	6.2	100.0
Total	48	100.0	100.0	

Table 10: Major of ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
Liberal Arts	49	46.2	46.2	46.2
Science	17	16.0	16.0	62.3
Business Administration	28	26.4	26.4	88.7
Others	12	11.3	11.3	100.0
Total	106	100.0	100.0	

Table 12: Country of Origin of L-B ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
South America	1	1.7	1.7	1.7
Africa	2	3.4	3.4	5.2
Europe	1	1.7	1.7	6.9
Asia	54	93.1	93.1	100.0
Total	58	100.0	100.0	

Table 13: Country of Origin of C-B ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
North America	1	2.1	2.1	2.1
South America	3	6.2	6.2	8.3
Africa	5	10.4	10.4	18.8
Europe	3	6.2	6.2	25.0
Asia	36	75.0	75.0	100.0
Total	48	100.0	100.0	

Table 14: Country of Origin of ESL Students

	Frequency	Percent	Valid Percent	Cumulative Percent
North America	1	.9	.9	.9
South America	4	3.8	3.8	4.7
Africa	7	6.6	6.6	11.3
Europe	4	3.8	3.8	15.1
Asia	90	84.9	84.9	100.0
Total	106	100.0	100.0	

Appendix B

Table 20: Analysis of Effective and Ineffective Variable

Variable	Effective Variable	Ineffective Variable (r^2< 0.05)
Gender	X7 (significant)	X7 (temperature) .195* (r^2= .038)
Age	X13 (significant)	X13 (Auditory) .199 ((r^2= .040)
Groups	X9 (Motivation) .342** (r^2= .117); X10 (Responsible) .299** (r^2= .089); X14 (Kinesthetic) .266** (r^2= .070); X15 (Requires Intake) .257** (r^2= .066).	X12 (Learn in Several Ways) .206*(r^2= .042); X18 (Afternoon) -.160* (r^2= .025)
Major	X15 (Requires Intake) -.223**(r^2= .049)	X8 (design) .162* (r^2= .026); X9 (Motivation) -.168* (r^2= .028)
Country of Origin	X11 (Structure) .289** (r^2= .084).	X6 (Light) .212* (r^2= .045); X9 (Motivation) -.186* (r^2= .035); X15 (Requires Intake) -.197* (r^2= .039); X16 (Evening-Morning) -.212* (r^2=0.045); X17 (Late Morning) -.191* (r^2= .036); X18 (Afternoon) -.165* (r^2= .26); X19 (Needs Mobility) -.179* (r^2= .26).
Note: Variables of 6, 8, 12, 16, 17, 18, and 19 were not used in this study due to its ineffectiveness.		

Table 21-A: Two-tailed Intercorrelations Between Independent Variables and Selected Learning Style Subscales (N=117)

	Variable	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
X1	Gender	1.000	.024	.305**	-.246**	-.095	.009	.195*	-.003	-.040	.081
X2	Age		1.000	.238**	-.138	-.095	-.013	.092	-.019	.126	.070
X3	Group			1.000	-.537**	-.570**	-.065	-.025	.025	.342**	.299**
X4	Major				1.000	.262**	.096	.062	.162	-.168	-.120
X5	Country of Origin					1.000	.212*	.093	-.029	-.186*	-.114
X6	Light						1.000	.166	.216*	.044	.197*
X7	temperature							1.000	.028	-.027	.052
X8	Design								1.000	.002	.246**
X9	Motivation									1.000	.400**
X10	Responsible										1.000

Note: ** Correlation is significant at 0.01 level (2-tailed).
*Correlation is significant at 0.05 level (2-tailed).

Table 21-B: Two-tailed Intercorrelations Between Independent Variables and Selected Learning Style Subscales (N=117)

	Variable	X12	X13	X14	X15	X16	X17	X18	X19
X1	Gender	.005	.038	.094	-.023	.014	-.085	-.091	.045
X2	Age	.050	-.199*	.042	-.040	.119	-.003	-.045	-.067
X3	Groups	.206*	-.067	.266**	.257**	.126	.056	-.160	.126
X4	Major	-.120	.100	-.131	-.223*	-.087	-.014	.101	-.170
X5	Country of Origin	-.036	.036	-.018	-.197*	-.212*	-.191*	.165	-.179
X6	Light	.111	.083	.226*	.009	.089	.029	-.027	.202*
X7	temperature	-.107	-.199*	-.081	-.035	.193*	-.042	-.018	-.178
X8	Design	.150	-.040	.111	-.195*	.114	.114	-.181	-.128
X9	Motivation	.438**	.299**	.519**	.188*	.038	.117	.047	.101
X10	Responsible	.048	-.092	.113	-.098	.075	.084	-.057	-.122
X11	Structure	.232*	.189*	.164	-.010	-.110	.014	.065	.163
X12	Learn in Several Ways	1.000	.162	.321**	.236*	-.013	.041	.126	.245**
X13	Auditory		1.000	.369**	.111	-.122	.010	.067	.313**
X14	Kinesthetic			1.000	.134	.026	.166	-.046	.253**
X15	Requires Intake				1.000	.083	.229*	-.032	.337**
X16	Evening-Morning					1.000	.387**	-.541**	-.089
X17	Late Morning						1.000	-.575**	.083
X18	Afternoon							1.000	.065
X19	Needs Mobility								1.000

Note: ** Correlation is significant at 0.01 level (2-tailed).
*Correlation is significant at 0.05 level (2-tailed).

Tabel 22-A: One-tailed Intercorrelations Between Independent Variables and Selected Learning Style Subscales (N=117)

	Variable	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
X1	Gender	1.000	.024	.305**	-.246**	-.095	.009	.195*	-.003	-.040	.081
X2	Age		1.000	.238**	-.138	-.095	-.013	.092	-.019	.126	.070
X3	Groups			1.000	-.537**	-.570**	-.065	-.025	.025	.342**	.299**
X4	Major				1.000	.262**	.096	.062	.162*	-.168*	-.120
X5	Country of Origin					1.000	.212*	.093	-.029	-.186*	-.114
X6	Light						1.000	.166*	.216**	.044	.197*
X7	temperature							1.000	.028	-.027	.052
X8	Design								1.000	.002	.246**
X9	Motivation									1.000	.400**
X10	Responsible										1.000

Note: **. Correlation is significant at the 0.01 level (1-tailed).
*. Correlation is significant at the 0.05 level (1-tailed).

Tabel 22-B: One-tailed Intercorrelations Between Independent Variables and Selected Learning Style Subscales (N=117)

	Variable	X11	X12	X13	X14	X15	X16	X17	X18	X19
X1	Gender	.061	.005	.038	.094	-.023	.014	-.085	-.091	.045
X2	Age	.041	.050	-.199*	.042	-.040	.119	-.003	-.045	-.067
X3	Groups	-.121	.206*	-.067	.266**	.257**	.126	.056	-.160*	.126
X4	Major	.104	-.120	.100	-.131	-.223**	-.087	-.014	.101	-.170*
X5	Country of Origin	.289**	-.036	.036	-.018	-.197*	-.212*	-.191*	.165*	-.179*
X6	Light	.224**	.111	.083	.226**	.009	.089	.029	-.027	.202*
X7	temperature	.125	-.107	-.199*	-.081	-.035	.193*	-.042	-.018	-.178*
X8	Design	.153	.150	-.040	.111	-.195*	.114	.114	-.181*	-.128
X9	Motivation	.105	.438**	.299**	.519**	.188*	.038	.117	.047	.101
X10	Responsible	-.101	.048	-.092	.113	-.098	.075	.084	-.057	-.122
X11	Structure	1.000	.232**	.189*	.164*	-.010	-.110	.014	.065	.163*
X12	Learn in Several Ways		1.000	.162*	.321**	.236**	-.013	.041	.126	.245**
X13	Auditory			1.000	.369**	.111	-.122	.010	.067	.313**
X14	Kinesthetic				1.000	.134	.026	.166*	-.046	.253**
X15	Requires Intake					1.000	.083	.229**	-.032	.337**
X16	Evening-Morning						1.000	.387**	-.541**	-.089
X17	Late Morning							1.000	-.575**	.083
X18	Afternoon								1.000	.065
X19	Needs Mobility									1.000

Note: **. Correlation is significant at the 0.01 level (1-tailed).
*. Correlation is significant at the 0.05 level (1-tailed).

Table 23: Gender Distribution of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	44	37.6	37.6	37.6
Female	73	62.4	62.4	100.0
Total	117	100.0	100.0	

Table 24: Age Distribution of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Unknown	6	5.1	5.1	5.1
Under 20 year-old	8	6.8	6.8	12.0
20 year-old<= 30 year-old	86	73.5	73.5	85.5
Over 30 year-old	17	14.5	14.5	100.0
Total	117	100.0	100.0	

Appendix C

Reliabilities for the PEPS (N=504)

Subscale	r
Sound	.86
Light	.91
Warmth	.86
Formal Design	.76
Motivated/ Unmotivated	.65
Persistent	.63
Responsible (Conforming)	.76
Structure	.71
Learning Alone/ Peer Oriented	.86
Authority- Oriented Learner	.48
Several Ways	.67
Auditory Preferences	.81
Visual Preferences	.71
Tactile Preferences	.33
Kinesthetic Preferences	.67
Requires Intake	.88
Evening/ Morning	.87
Late Morning	.84
Afternoon	.88
Needs Mobility	.83

Note: From "Productivity environmental preference survey: An inventory for the identification of individual adult learning style preferences in a working or learning environment," by G. E. Pierce, 1996, p.40. Copyright 1996 by Price Systems, Inc. Lawrence, KS.

Appendix D

Questionnaire #2
Demographic and Background Data

Please indicate your **country of origin** and your **learning experience of English as a foreign language** in the space provided. Blacken the bubbles below each of the boxes you filled out.

1. What is **your country of origin**?
   Please choose the number as to each continent. (One choice only)
   ( )

North America	South America	Africa	Europe	Asia	Oceania
1	2	3	4	5	6

You may indicate the name of your country( )

2. **How long have you been studying English** as a foreign language?
   Please choose the number as to your answer.
   ( )

Never	A half year-Less than 1 year	1 year-Less than 2 years	2 years-Less than 3 years	3 years-Less than 4 years	More than 4 years
1	2	3	4	5	6

3. If you have an experience in **studying abroad other than the United States**, please **indicate by YES or NO.**
   ( )

If yes, what country? ( )

Any comments about your language learning experience?

Appendix D

September 15, 2008
Dear international students at Marshall:
I am a graduate student in Adult Technical Education, majoring teaching English as a foreign language, at Marshall University. Currently, I am conducting a research project entitled "Assessment of Adult EFL (English as a foreign language) Learners' Preferable Learning Styles: Implications for an Effective Language Learning Environment" as part of the thesis class requirements.
Today, I am mailing you because you have been randomly selected as a participant for this survey from the Marshall University international mailing list. Your responses will contribute to the success of this study and provide much needed information. This survey is strictly voluntary and will take **approximately 20-30 minutes** to complete. If you are interested in participating in the survey, **please see more information below and contact me by the following e-mail: yamauchi@marshall.edu**. The survey is being conducted **during September 22-26 at Harris Hall 437**. Your cooperation will be deeply appreciated. You may withdraw from this survey at anytime without penalty.
The purpose of this study is to understand the actual needs of a foreign language education by investigating the relationships of EFL learners' preferable learning styles and an effective EFL environment. This study will examine the practical factors and needs to create an effective EFL learning environment. In brief, this survey is comprised of two parts:

1) The Productivity Environmental Preference Survey (PEPS) for asking your learning preference

2) An additional questionnaire for asking your origin of country and learning experience.

Please be informed that all data will be kept confidential. No one except the researcher will have access to the data.
The following contact information is available if you have questions or concerns regarding the survey:

Marshall University One John Marshall Drive Huntington, WV 25755 Toll Free - 1-800-642-3463 Local - (304) 696-3170	My Supervisor: Dr. Howard R.D. Gordon Marshall University (304)696-3079

Kayoko Yamauchi, graduate student, Marshall University
(304)617-3414
yamauchi@marshall.edu

Schedule for the Survey

Dear Participant:

Thank you for your cooperation in this study. I really appreciate your participation to complete this study. Following is a schedule for the survey.

Location: Harris Hall 437 at Marshall University

Time:

1) **11:00 AM to 1:00PM**
2) **5:00PM to 7:00PM**

***You can participate anytime you are available and leave when you finish.**

Date: During September 22nd to 26th.

Since there needs to be a supervisor in this survey, I need to know when you can come to take this survey. Refer to the following time schedule and **please e-mail your available time to the researcher, Kayoko Yamauchi.** (You may indicate the available time **more than one day**.)

Date	1) Morning	2) Evening
September 22, Monday	11:00AM to 1:00PM	5:00PM to 7:00PM
September 23, Tuesday	11:00AM to 1:00PM	Not applicable
September 24, Wednesday	11:00AM to 1:00PM	5:00PM to 7:00PM
September 25, Thursday	11:00AM to 1:00PM	5:00PM to 7:00PM
September 26, Friday	11:00AM to 1:00PM	5:00PM to 7:00PM

I thank you for your understanding and participation in advance.

Sincerely,
Kayoko Yamauchi, graduate student, Marshall University
(304)617-3414
yamauchi@marshall.edu

Monday, September 8, 2008
Dear LEAP teachers of 108/109 reading,

Hi, this is Kayoko Yamauchi, a graduate student at Adult Technical Education Department at Marshall University. Currently, I am conducting a research project entitled "Assessment of Adult EFL Learners' Preferable Learning Styles: Implications for an Effective Language Learning Environment" as part of the thesis class requirements. Due to my data collection process, I would like to ask if you allow me to have your class time for conducting this survey with your understanding about this study.

This research project is designed to analyze the relationships of EFL learners' preferable learning styles and an effective EFL environment. In brief, this survey is comprised of two parts: the Productivity Environmental Preference Survey (PEPS) for asking the surveyor's learning preference; an additional questionnaire for asking their origin of country and learning experience. The estimated time to complete this survey is 30 to 40 minutes (No longer than 1 hour.)

If you agree on the contents above, I would like to conduct this survey on following two days as Dr. Nancy will be available this time in order to help me supervising the survey:

Date	Day	Level	Time	Instructor
September 24th	Wednesday	108 A	9:00-9:50	(Kayoko)
		108 B	2:00-2:50	(Kathryn)
September 26th	Friday	109 A	11:00-11:50	(Mollie)
		109 B and C	2:00-2:50	(Debbie)(Beverly)

Thank you so much for your consideration,

Kayoko Yamauchi
yamauchi@marshall.edu
304-617-3414