

CULTURAL VARIATIONS IN LEARNING AND LEARNING STYLES

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ABSTRACT

The need for cross-cultural understanding of the relationship between culture and learning style is becoming increasingly important because of the changing cultural mix of classrooms and society at large. The research done regarding the two variables is mostly quantitative. This review summarizes results of the existing research on cultural variations in learning styles. Limitations of the existing studies are discussed and some suggestion for future research is proposed.

Keywords: Culture, cultural variations, learning, learning styles

INTRODUCTION

Although culture has been defined differently, there is a universal definition of culture. Culture can be conceptualized as "shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives that are transmitted across generations" (House, Hanges, Javidan, Dorfman, & Gupta, 2004, p. 15). There are various areas where culture has been examined. Three areas which are more related to language and learning include anthropology (e.g., Benedict, 1946; Kluckhohn, 1962; Hall, 1976), psychology (e.g., Markus & Kitayama 1991; Triandis, 1995) and management (e.g., Hayashi, 1999; Hofstede, 1980). Researchers (e.g., Bedell & Oxford, 1996) believe that language and culture are inseparable part of each other and comprehending a culture without paying attention to its language is impossible. On the other hand, it is also impossible to understand a language without its cultural contexts. The two are strongly interwoven. It has been said that there is a clear and strong relationship between different categories of thought of a given community and the forms of language they use (Beattie, 1996).

Learning involves human activities such as feeling, thinking, reflecting and doing (Kolb, 1984). Individuals have to learn to develop special abilities and preferences for such activities. These specialized abilities are called learning styles. Learning styles are defined as "individual consistencies in perception, memory, thinking and judgment across any stimulus condition" (Curry, 2000, p.239).

Learning styles have been investigated by many researchers and all agree on culture affects the development of learning styles (e.g., Devita, 2001; Pratt, 1991; Katz, 1988; Barmeyer, 2004; Yamazaki & Attrapreyangkul, 2011; Gundaz & Ozcan, 2010; Yamazaki & Kayes, 2007).

DEFINING CULTURAL VARIATIONS

Although numerous definitions have been offered by anthropologists and sociologists through the years, the concept of culture remains elusive, broad and ambiguous (Ball & Farr, 2003; Lessard-Clouston, 1997).

Various elements constitute the cognitive and behavioral aspects of culture. In other words, cultures are unified entities in which these elements exhibit strong interdependent relationships. Among the variety of elements, some elements such as language, gender, religion, and ethnicity do have a greater relevance to the notion of culture (Hall & Hall, 1990). People with similar cultures may speak different languages and people belonging to different cultures may speak the same language (Beattie, 1996). It has been argued that culture and language, apart from their interrelationship, influence each other so much so that linguists use the term language to refer to "the abstract system underlying the collective totality of the speech and writing behavior of a community" (Ball & Farr, 2003, p. 436). Culture is defined by Hofstede, a prominent figure in the field of cultural studies as "the collective programming of the mind which distinguishes the members of one human group from another" (Hofstede, 1980, p. 25), and is determined through institutions such as family, school, universities and work. Culture and learning are connected in important ways.

CULTURAL DIMENSIONS IN ANTHROPOLOGY

Edward Hall and Ruth Benedict are among the main figures in this field. Hall (1976) classified culture to high-context and low-context cultures. In high-context cultures, non-verbal behaviors, external physical environment are important for its members in conveying the meaning in communication. For instance, Japanese, Chinese, French and Arabic countries represent high-context cultures. In high-context cultures people value having long terms relationships (Yamazaki, 2005). Furthermore, looking at Kolb's learning style model in relation to Hall's (1976) dimensions of culture by Yamazaki (2005) reveals that high-context cultures cherish interpersonal relationships and this trait goes well together with the concrete experience (CE) abilities in which persons value relationships.

In contrast, in low-context culture, explicit verbal messages are important in communication rather than non-verbal behaviors and external physical environment. Most information is conveyed through explicit codes, therefore explicit communicative styles in logical forms are highly valued. Interpersonal relationships last for a shorter time (Hall, 1976). For instance, the United States, Switzerland and Germany present low-context cultures. It has been stated that communication patterns of low-context cultures are related to active conceptualization (AC) abilities, since those with low-context culture are likely to learn by logical thinking and analysis which accords to characteristics of AC abilities (Yamazaki, 1995).

The second dimension of culture in the anthropology field which is classified by Benedict (1946) is shame versus guilt cultures. In the culture of shame, shame process relies on individual experience with their perception about surrounding audience and environment (Doi, 1979). It has been further explained that shame process is more related with CE abilities, since CE is an ability that can stir up shame emotion as a psychological reaction about one's behavior (Yamakazi, 2005).

In Guilt culture, the development of an individual conscious is important and the focus is on inner standards of behavior within the self rather than outer standards such as environment and audience (Benedict, 1946). Internalized criticism in guilt process activates reflective observation (RO) abilities. Consequently, the development of inner standards and internalized criticism leads us to conclude that guilt culture is conceptually related to RO abilities (Yamazaki, 2005).

CULTURAL DIMENSIONS IN MANAGEMENT

Another field of study from which culture has been examined is cross-cultural management domain. In cross-cultural management studies, the focus is on cultural differences in values, perceptions, attitudes and behaviors in organizational settings. Hofstede's model of cultural dimensions and Hayashi's cultural model of organization will be discussed in the review.

Hofstede is one of the main figures in the field of management and organizational culture. Despite the existing criticism on his work, his model is influential in this field (Clark, 2003). Hofstede's four collectivism/individualism, power distance, uncertainty avoidance, masculinity/femininity dimensions are the most famous cross-cultural work and still the major reference in today's cross-cultural researches. Hofstede's cultural framework has been applied in a wide variety of contexts by many researchers (Blodgett, Rose, Horton & Bakir, 2008). For example, they cited studies in management and marketing such as Alden, Hoyer and Lee (1993) that used Hofstede's framework to examine cross-cultural differences in attitudes and behaviors. In addition, they also cited Abrams, Ando, and Hinkle (1998) who used his model in organizational identification and employee turnover intentions. They also mentioned Soutar, Grainger, and Hedges (1999) who used his framework to look compare stereotypes across different cultures.

It has been said that societies with high uncertainty avoidance tendencies prefer to use RO abilities. These cultures have a feeling of fear or anxiety when facing unfamiliar situation or conflicts in their work place, therefore the use of RO enables them to watch carefully and reflect upon experiences and observations and control their fears (Yamazaki, 2005). In contrast, those who have low uncertainty avoidance culture feel more comfortable in unstructured and unclear situations and are more willing to take risks when facing new rules and ideas (Hofstede, 1997). It has been stated that those with AE abilities learn through risk taking and action taking therefore, it would be logical to conclude that those with low uncertainty avoidance are involved in AE abilities (Kolb, 1984; Yamazaki, 2005). The second classification in the field of cross-cultural management is made by Hayashi (1999). He classified organizational culture to M-type and O-type organizations. Based on his classification, western organizations are example of M-type, while Japanese organizations are considered as the O-type. Individuals or any section in M-type organizations have clear job boundaries, and within these boundaries, members tend to perceive reality by analytical cognition that is embedded in AC learning abilities (Hayashi, 1999).

In contrast, individuals in O-type organizations don't have explicit job boundaries in their work place and more people oriented rather than task oriented. People orientation is a characteristic of the CE learning abilities. Furthermore, members in O-type organizations develop analogue cognition that makes them to see the world as a whole (Hayashi, 1999). This trait of cognition represents CE abilities in a way that members see the world entirely (Yamasaki, 2005).

CROSS-CULTURAL PSYCHOLOGY

In the domain of psychology, the two cultural typologies that maybe theoretically related to the Kolb's model of learning abilities are interdependent-self and independent-self discussed by Markus and Kitayama (1991) and the other is cognitive style of social context which is introduced by Witkin (1976).

Interdependent-self is the self and others who are situated in the surrounding social contexts. In dependent-self, the persons show their thoughts and feelings as individual beings and are detached and distinct from others. It has been proposed that those with interdependent-self are more likely to learn through the CE and RO abilities, whereas those with independent-self tend to learn through the AC and AE abilities (Yamazaki, 2005).

The other sub dimensions of culture in the cross-cultural psychology domain are cognitive styles of field-dependent and field-independent which are introduced by Witkin's (1976, 1979). It has been said that field-dependent people, develop social and interpersonal skills in communication and contact with others. In contrast, field-independent people place distinct boundaries between their inner self and outer self (Witkin, 1976, 1979). Regarding learning styles, it has been proposed that those with field-dependent style are more likely to learn through the CE abilities, while those with the field-independent style tend to learn through the AC abilities (Yamazaki, 2005).

DEFINING LEARNING STYLES

One of the famous learning theories especially relative to cross-cultural examination is Kolb's (1984) learning model. Learning styles can be summarized in the Figure 1.

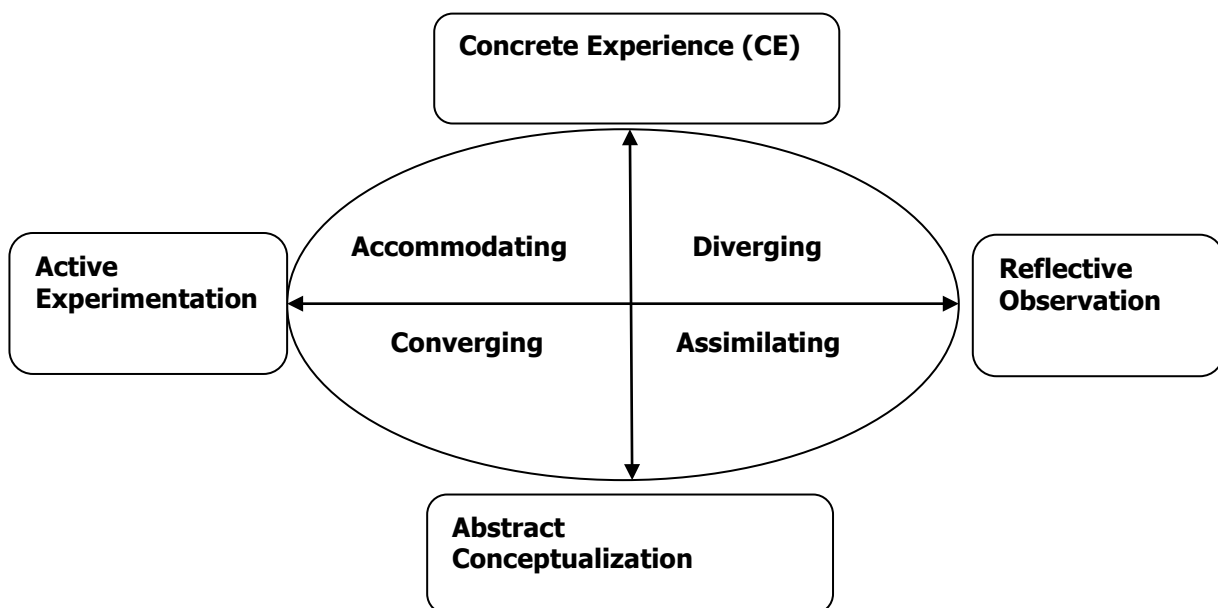


Figure: 1
Experiential Learning Cycle (Kolb, 1984)

It also has been used extensively in management and education fields (Kayes, 2002). Kolb's model has been applied in the field of cross-cultural and international studies (e.g., Barmeyer, 2004; Fridland, 2002; Yamazaki & Kayes, 2007; Auyeung & Sands, 1996; etc.). Kolb's model is consisted of concrete experience (CE), abstract conceptualization (AC), reflective observation (RO) and active experimentation (AE) learning abilities (Kolb, 1984). The combination of four learning abilities constitutes a diverging learning style specialized in the two CE and RO learning abilities, a converging learning style specialized in the two learning abilities of AC and AE, an assimilating learning style specialized in AC and RO abilities, and an accommodating learning style set in CE and AE abilities (Kolb, 1984; Kolb & Fry, 1975).

Learning styles have been investigated in the educational psychology literature (e.g., Claxton & Murrell, 1997; Schmeck, 1998), and over thirty instruments for measuring learning styles have been developed (e.g., Guild & Garger, 1985; Jensen, 1987). It has been identified that there are different kinds of learner such as active and reflective learners, sensing and intuitive learners, visual and verbal learners, and sequential and global learners.

Active and reflective learners are related to extrovert and introvert, as described by the Jung-Myers-Briggs model. Sensing learners learn by observing, gathering data through the senses, while intuitive learners learn by indirect perception and imagination. Visual learners learn by seeing pictures, diagrams and timetables. On the other hand, verbal learners learn through words, written and spoken explanations. Sequential learners learn by following logically step by step, whereas global learners learn more randomly without any connections (Gunduz & Ozcan, 2010).

It has been stated that people from different cultures and even individuals within the same culture have distinctive learning style patterns (Guild, 1994). Due to different types of learning style, teaching methods which are used by instructors may vary. Some instructors prefer giving lectures at classroom; other may focus more on rules, some use demonstration, while some prefer memorization. As a result, the mismatch between the individual's learning style and the instructor's teaching style may lead to failure of learners. In order to address different learning styles, effective teachers use a variety of teaching styles and apply diverse teaching strategies and make effective educational decisions and practices that work best for all students (Guild, 1994; Felder & Silverman, 1998; Lawrence, 1993; Oxford, Ehrman, & Lavine, 1991; Schemeck, 1998).

INTEGRATION OF CULTURE AND LEARNING STYLES

Exploring culture is becoming an important and insightful issue since being part of a culture can influence human behavior in many ways. People who belong to the same culture may share similar ways of thinking, values and beliefs (Hale-Benson, 1986). While we are living in our native country, it is difficult to identify the existing differences between the cultures and people. The possible differences among people are especially hard to recognize among homogenous culture such as Iran which can considered as a monoculture society. On the other hand, in a multicultural society such as Malaysia, seeing the differences among people and students would be certainly less difficult. Therefore, in Malaysia, people have more opportunities to compare and observe different cultures. Mainly the researchers in the field of education are perhaps more familiar with cultural differences among their students.

Moreover, the question that whether being in a different culture impacts an individual's learning style arises. In this regard, the study by Guild (1994) explains that learning styles and culture connection are both important and controversial. It is important because obtaining this information helps learners to succeed in school and makes curriculum designers and instructors reexamine educators' expectations, beliefs and values. However, it is controversial since "generalization about a group of people has often led to naive inferences about individuals within that group" (Guild, 1994, p.16). It means that although people who share a culture usually share the same learning styles, it is a mistake to consider that all members of the group have the tendency toward the same style. Moreover, finding the relationship between learning style and culture is controversial because of the sensitivity surrounding the achievement difference between minority and non-minority students.

Guild (1994) gives an example of African-American as minority students whose learning style preferences described by the state of New York booklet has led to much debate and intense inspection.

Coming to this point, a question that comes into mind is that how we know if culture and any way of learning are connected. To conclude about their relationship is not easy or definite (Guild, 1994). Guild further indicates that although there are lots of studies investigating the different ways of learning with a unique and distinctive approach, their works are not broad enough and mainly focus on a specific learning style model or a particular cultural group. He claims that "no work, to my knowledge claims to be comprehensive on the topic of culture and learning styles" (1994, p.17).

The research has shown that there are three approaches from which researchers have provided information about culture and learning styles. The first method is the set of observation-based descriptions about cultural groups of learners. Studies done using this method have often compared the learning style patterns of European-American and minority students such as African-Americans, Mexican-Americans and Native Americans (Guild, 1994).

The second method to measure the connection of culture with learning style is data-based description of specific groups (Guild, 1994). Guild further explains that in this method, the learning style instrument is used to collect data of a cultural group, compare the different groups with each other or compare a group with another previously studied one. There are various instruments designed to measure learning styles. Learning style instruments usually assess differences in two general ways. Some instruments look for style preferences such as Myers-Briggs Type Indicator.

Another type of instrument examines style strength such as Swassing-Barbe Modality Index. This type of assessment requires the respondents to repeat the given patterns auditory, visually and tactilely. Then, the obtained data should be interpreted in relation to the type of assessment (Guild, 1994). An important fact regarding self report instruments is that "they are language and culture specific" (Guild, 1994, p.18). It means that when respondents reply to an item, their cultural experiences will be reflected in their response. The third approach to measure the relationship of culture and learning style is through direct discussion (Guild, 1994). Ramirez (1989) believes that cognitive style research could provide a framework to consider the diversities within and between cultures.

For example, Shade (1989) comments that:

Perceptual development differs within various ethnocultural groups. It is therefore, an erroneous assumption in teaching-learning process to assume children see the same event, idea or object in the same way (p.142).

There are five common assumptions held by researchers who study culture and learning style connections. The first common idea is that students from different age groups will differ in their way of learning. Secondly, most scholars believe that learning styles are a function of both nature and nurture. It means that although learning styles are inborn abilities, the effect of environment such as family, immediate culture and wider culture are inevitable. The third agreement on culture and learning style is that learning styles are neutral. In another word, although learning style approaches can be used both successfully, it can become a barrier if applied inappropriately (Guild & Garger, 1985). The fourth common concept concurred by researchers is that results obtained from learning style research cannot be generalized and a particular learning style cannot be attributed to all individuals within a group (Griggs & Dunn, 1989).

Finally, many researchers agree that cultural conflicts may happen between some students and their learning experiences in schools. When students are socialized in different ways from their school expectations they have to adjust themselves to the culture of school (Guild, 1994).

Despite the accepted ideas, there are differences of opinion about applying theory on culture and learning style. For instance, some researchers have different opinions on whether a particular cultural value or expectation should be acquired by students or it is an inborn ability. Another dispute is that whether teachers who have their own cultures and teaching styles can successfully deal with students who also have their own preferred learning styles (Guild, 1994).

Hence, as it has been suggested, in order to provide equal opportunities for success we have to use different or diverse teaching methods that can be corresponding to the differences among students (Bennett, 1986). Furthermore, Guild (1994) states that ideas about culture and learning style can be a great help for teachers who believe all students can learn to offer chances for success to all students.

SOURCES OF DATA

For this meta-analysis study, the search for articles related to culture and learning style and their connections was done basically by Google search on some key words such as culture, culture and learning, learning styles and culture and learning styles in the first stage to get some ideas of authors and journal papers related to the topic (Table 1). In the second stage, searches were made via university's electronic databases to either find the related articles by using key words or the full texts of the articles or through Google. The databases used for the searches include ERIC, Oxford Journals Online, Science Direct, Sage Journals Online and Taylor and Francis.

Out of 56 searched articles, 30 were identified as related to culture and learning styles. The rest were found to be less relevant and unrelated to the focus of the study. Of the 30 related articles for review, 10 articles are based on quantitative methodology (e.g., questionnaire) were used for the discussion on results, and the rest were used for the definitions.

Table: 1
Topics on culture and learning styles

Topic	Subtopic
Cultural variations	High vs. low context cultures, shame vs. guilt cultures, uncertainty avoidance culture, M-type vs. O-type cultures, interdependent-self vs. independent-self and field dependent vs. field independent cultures.
Learning styles	Diverging, Converging, Assimilating and Accommodating.

METHOD

A meta-analysis is the statistical analysis of a large collection of analysis results for the purpose of integrating the findings (Glass, 1976).

It has been stated that the goal of a review is to summarize the common issues and data regarding the specified topic, to emphasize the similarities and differences between the similar and comparable studies, to discuss the strength and weaknesses of available researches on the topic of interest and to provide valuable suggestions for future researches related to cultural studies on learning style.

The discussion should be structured and include factors that help interpreting the main findings and possible causes of bias. It should cover completeness of the evidence, the quality of the evidence, and the possibility of bias (DeCoster, 2004).

The current review searched for all related articles in the area of culture and learning style; by analyzing each individual article, the related ones were identified. The ones which were more relevant to the topic were classified under one category and the irrelevant ones were put aside.

This process was repeated until there was no article left, and all the similar ones in content were gathered together under one category. The common or similar concepts and themes in the selected articles were identified and various categories were formed. Finally the identified categories were compared to each other.

COMMON THEMES

The two main themes of the review were cultural variations and learning styles. There were 6 dimensions within cultural variations, and 4 categories within learning styles. Learning styles have been investigated by many researchers and all agree on cultural effects upon the development of learning styles (e.g., Devita, 2001; Pratt, 1991; Katz, 1988).

CULTURAL VARIATIONS AND LEARNING STYLES

In a study examining the learning styles of 150 Arabic, 150 Turkish and 150 Cypriot university students, a learning style questionnaire was used to collect data.

The questionnaire developed by Felder and Solomon (1991) consists of demographical information regarding the participants' gender, age, culture, department and native language.

The results showed that the culture of the students affected their learning styles. It was found that Arabic students learned more actively than Turkish and Cypriot students. The result in this case was contradictory to most teachers' expectations for quiet and non-active Arabic students. In addition, it was found that native languages of the students affect students' learning styles, and there was no difference between female and male students in terms of their learning styles. Regarding gender differences, there was difference between men and women in terms of learning styles (Gundaz and Ozcan, 2010).

Another study examined learning style differences between Japan and Thailand on a sample of 210 of Japanese and 188 of Thai employees. The data for Japanese learning styles were collected from Japanese employees in Tokyo and the data for examination of Thai learning styles were collected from Japanese employees in Bangkok. With regard to gender, a majority of the Japanese employees were male.

Conversely, a majority of the employees were female in Thailand. Kolb's (1999) Learning Style Inventory (LSI) was used to examine individual learning styles. Results of the analysis showed that there were significant differences between Japanese and Thai employees in terms of all of the eight learning style variables that connect the dimension of the AC versus the CE mode. However, learning style variables in relation to the other dimension of the AE versus the RO had no significant association between the two nationalities.

Among four learning modes in the process of learning: CE, AC, RO and AE, Japanese preferred to use more CE and less AC than Thai, while both Japanese and Thai preferred to employ RO and AE at the similar level. It can be further explained that Japanese exhibited their preference for CE over AC, and RO over AE, which created the learning style of diverging. While Thai employees showed more balanced learners who used relatively four learning styles equally. Thai learners showed more tendencies for using CE over AC and AE over RO, which presented the accommodating learning style. However, their learning preferences were not so particularly inclined towards CE or AE on account of their balancing orientation (Yamazaki & Attrapreyangkul, 2011). Another study examined cultural differences in learning styles between Japanese managers (n=267) and American managers (n=126) using quantitative (Kolb's Learning Style Inventory, 1999) and qualitative data (unstructured interview) in three stages (an initial contact and visit, a confirmation by telephone call, and a data collection visit) to examine learning styles.

The study was conducted in Japanese multinational corporations doing business in the USA to reveal how learning style of Japanese emigrants changed over time, and how Japanese managers differed from their US counterparts. Results suggested that Japanese managers became more concrete and more active in their learning styles over time spent in the USA. Results also revealed that the learning style of emigrants changed in response to cultural demands, and that the patterns of change did not necessarily reflect that of US managers. In addition, there was a significant difference in their learning styles.

Japanese managers are more concrete and reflective, whereas American managers are more abstract and active. It means that Japanese managers are linked more with the diverging learning style, and American managers reside in the converging learning style (Yamazaki & Kayes, 2007).

Another study on the learning styles of 160 Japanese undergraduate students with Economics and Science Majors using Kolb's (1985) instrument (Learning Style Inventory Version 2a) found that Japanese students had more tendencies toward CE and RO. For example, 39% of the total students were inclined to CE, 36% RO, 15% AC, and 10% AE (McMurray, 1998).

Learning style differences between Chinese ($N=100$) and American ($N=105$) teachers in work settings were investigated by another research. The data were collected using Kolb's (1984) Learning Style Inventory. The data showed that there were no significant differences between the American ESL teachers and Chinese EFL teachers in terms of their learning style inclination. The largest number of teachers in both groups had tendencies toward diverging style, while there was no predominant style within the American group (Fridland, 2002).

Boyatzis and Mainemelis's (2000) studied 607 full-time and 679 part-time graduate American students of an MBA program. Data about students' learning styles were collected by Kolb's Learning Style Inventory (1999). They also examined whether there were significant demographic differences between gender and age groups.

The result showed that full-time students had more tendencies toward CE and somewhat reflective abilities, but that 679 part-time students showed a significantly stronger preference for abstract and active learning abilities that are categorized as the converging learning style.

In terms of gender differences, male students had more tendencies toward abstract conceptualization, while female students showed significantly stronger preference for concrete experience. Women also had a significantly stronger preference for active experimentation. There were no significant differences between age groups.

In another cross-cultural study, the learning styles of 123 Quebecois, 98 German and 132 French students in a business administration program were examined. It was found that German students were significantly more abstract than French and Quebecois students, while French and Quebecois students were significantly more concrete than German students. German students had significantly stronger preferences for active experience abilities than the other two groups and there was no statistical difference in the reflective observation among them. The results of the learning-style distribution of French, German, Quebec students also indicated that French were more oriented toward diverging style; German students toward assimilating and converging style, and Quebecois toward accommodating style (Barmeyer, 2004).

In addition, he looked at learning style and gender differences and found significant gender differences. Female students had higher CE abilities than male students in this dimension, while male students showed a higher average score than the female students related to RO and AC abilities. There was no significant difference concerning the fourth dimension, AE. The results of his study showed that female students had more affective orientation in the learning style and this finding supports the hypothesis of his study (Barmeyer, 2004).

A study on Australian, Hong Kongese and Taiwanese accounting students examined how individualism-collectivism is reflected in learners' learning styles.

Australia represents the Western individualistic culture, and Hong Kong and Taiwan represent the Chinese collectivistic culture. The study collected data employing Kolb's Learning Style Inventory (1999). The sample comprised 303 Australian, 157 Taiwanese accounting students and 172 accounting students from Hong Kong. The results showed that students from Chinese cultures were significantly more reflective and abstract and less active and concrete than the Australian students. In addition, the result of the study supported the hypothesis that the interdependent-self was more connected with RO whereas the independent-self is more related to AE (Auyeung and Sands, 1996).

Hoppe's (1990) study used the Hofstede's Values Survey Module and Kolb's Learning Style Inventory to examine the relationship between uncertainty avoidance and learning styles using a sample of 1590 alumni from 19 countries: the US, Turkey, and 17 European countries. The questionnaires were sent to different countries through post between December 1983 and April 1984. He examined the relationship between strong-weak uncertainty avoidance and the reflective-active learning abilities, and found that those countries whose members were more willing to take risks and tolerated unclear and unstructured situations (low uncertainty avoidance) tended to acquire knowledge in a more active, experimental way, whereas those countries such as France, Spain and Turkey which showed stronger uncertainty avoidance were more likely to gain skills through RO.

Another research study was conducted on the relationship between Witkin's cognitive style and Kolb's learning model (1984) with 199 nurses. The results showed that field-dependence was related to CE abilities, while field-independence was connected with AC abilities (Murphy, 1993).

In sum, the common theme in all reviewed studies is that learners from different cultures have different preferences for learning styles. Since the findings confirmed the relationship between some dimensions of culture and learning styles, being aware of the relationship between the two aspects of learning can improve the learner and classroom outcome extensively.

Therefore, special attention should be paid to the relationship between the cultural tendencies of learners and their preferred learning styles.

DISCUSSION

This review found some limitations in previous studies concerning the measurement method of the cultural variations and tendencies itself. None of the above studies have come up with some sort of instrument in order to determine the tendencies of students towards some of the culture dimensions.

Some studies have considered cultural variations as being in a different country or society, and some followed Hofstede's study and his findings to present the differences between societies with scores and numbers resulted from Hofstede's study. However, these studies did not approach the variations with some other methods or design a questionnaire to examine culture that is a very complex phenomenon. In addition, qualitative measurement of culture such as interview, observation and focus group discussion along with quantitative methods followed by sound instruments to measure the investigated cultural dimensions would be crucial. For example, only Yamazaki and Kayes's (2007) study employed qualitative methods along with quantitative mode.

Another gap in previous studies concerning cultural variation among students and its relation to learning styles is that some dimensions of culture are related to learning styles of students, however the number of the cross-cultural comparative studies is not sufficient to fully understand the relationship between cultural differences and learning styles (Yamazaki, 2005).

In addition, as reviewed above, there are only a few studies that discuss the relationship between a type of culture and a particular learning style (e.g., Hoppe, 1990; Auyeung and Sands, 1996). These studies only focused on particular cultural models such as Hofstede's (1997). Nevertheless, it has been argued that the cultural models suitable for linking with learning styles are vast and should not be limited to one or two models (Yamazaki, 2005). For example, Murphy (1993) in his study focused only on cultural variations from the psychology domain and investigated the relationship between field dependent and field independent styles introduced by Witkin (1976, 1979). Another study by Hopp (1990) examined the relationship between uncertainty avoidance from Hofstede's model and learning styles, however it could be more inclusive and generalizable if other dimensions of culture from different domains were investigated in the study.

This issue also concerns the measurement of learning styles. Almost all the above studies (Hopp, 1990; Yamazaki and Kayes, 2005; Auyeung and Sands, 1996; McMurray, 1998; Boyatzis and Mainemelis, 2000; etc.) employed Kolb's (1984) Learning Styles Inventory since the LSI is one of the most frequently used instruments to assess learning styles (Davies, Rutledge, and Davies, 1997; West, 1982) and has been widely used to examine learning styles in cross-cultural settings.

However, it would be beneficial to employ other available learning style instruments as well to validate other instruments and not sticking to one instrument which has been said to be the most widely used. Furthermore, it has been asserted that the interplay between people and the world shapes learning styles at five levels: psychological types, educational specialization, professional career, current job, and adaptive competencies (Kolb, 1984; Kolb, Boyatzis, & Mainemelis, 2001).

Therefore, as Yamazaki (2005) suggests, a close examination between the cultural component from different domains and all of the six factors will give us valuable insights into how individual learning styles are shaped and developed in a particular culture.

Studies on learning styles regarding gender differences have reached to mixed conclusions. It has been concluded that there is no significant difference between male and female learners in terms of their learning styles (e.g., Gunduz & Ozcan, 2010).

Men and women are different but do these differences extend to learning styles? However, the results of other studies showed that there is a significant difference between male and female students. For example, female students had more affective orientation in the learning style and a significantly stronger preference for AE (Barmeyer, 2004; Boyatzis and Mainemelis, 2000).

Although several researchers have started to compile a database to clearly identify the female learning experience, there is not enough data yet to definitely answer questions in comparing women's and men's learning styles.

SUGGESTION FOR FUTURE RESEARCH

Coming from different cultural backgrounds, students could be incorrectly evaluated by teachers. Educators may under-estimate capabilities of learners by concluding that learning styles are not the reason these children fail. It could be a teacher's incorrect perception about students and these perceptions could reduce the quality of instruction provided these learners. Thus, instruction could be mismatched to the learner (Dunn, 1990). In addition, as most reviews showed, demographic variables affect students learning styles. Thus, each student learns in a different way, and to address these learning styles, teachers should use a variety of teaching styles. For further research on this topic, teaching styles of teachers and life styles of students should be examined to get more convincing results.

Future research can also examine the role of native language of the students since language is a medium for transmitting and internalizing culture. Culture and language are therefore embedded in each other. If language plays the key role for the differences, then we should observe a language effect among the different cultures.

As the reviews showed, there are differences in learning styles among learners from different cultures. With the growing multicultural nature of both L2 and foreign language classes, teachers and researchers have to do their best to facilitate learners' progress and solve difficulties in students' academic affairs, which may be caused by socio-cultural and educational differences.

Therefore, teachers should be fully aware of differences among learners' culture to minimize misunderstanding in either instructor/student or student/student interactions. In order to minimize the misunderstandings, teachers need to know how to teach and deal with learners from different cultures.

It means that teachers should get intellectually and emotionally accustomed to the fact that in other societies, people learn in different ways. Bennett (1996) challenges TESOL educators to move "beyond tolerance" in order to develop intercultural communication in multicultural classes.

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Appendix: Summary of Reviewed Studies

Hoppe's (1990)	Adults from 19 countries: the US, Turkey, and 17 European countries	Survey	Reflective observation is more linked with strong uncertainty avoidance, whereas the abstract experience is more related to weak uncertainty avoidance.
Murphy (1993)	Nurses (N=199)	Survey	Field-dependence is related to the concrete experience abilities, while field-independence is connected with the abstract conceptualization abilities.
Yamazaki and Attrapreyangkul (2011)	Japanese (N=210) Thai (N=188) employees	Survey	Among four learning modes in the process of learning: CE, AC, RO and AE, Japanese preferred to use more the CE and less the AC than Thai, while both Japanese and Thai preferred to employ the RO and the AE at the similar level