Learning Styles and Typologies of Cultural Differences:

A Theoretical and Empirical Comparison

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Abstract

This paper presents the relationship between typologies of cultural differences and the learning styles of Kolb’s experiential learning theory (ELT). Empirical cross-cultural ELT studies of various cultural groups indicate that learning styles may differ from one culture to another, but few studies have addressed the question of exactly which culture is related to which certain learning style. The present paper concerns this inquiry. Exploration of this inquiry has been made in two parts. The first part investigates conceptual analogies and relationships between Kolb’s ELT and six cultural typologies in the domains of anthropology, cross-cultural management, and cross-cultural psychology. The second part focuses on the empirical results of past cross-cultural ELT research with a discussion about how these empirical results are reflected in the investigated cultural typologies. Those two examinations reveal that particular culture as categorized in those domains has a great effect upon the development of certain learning styles.
Introduction

Learning is a universal and essential human activity the world over. Yet each country never stops to explore and develop its own methods of learning in order to satisfy the demands particular to its own internal and external environments. Understandably, the way in which learning styles vary among cultures necessarily affects the continuity and development of a certain learning situation fitted to each country. The perspective that there is a relationship between learning styles and culture is hardly new and has been discussed in scholarly research for a few decades.

Kolb and Fry (1975; Kolb, 1984) point out that family, school, and work are important media for the transmission of cultural values and are therefore influential socialization agents in the development of learning styles. Hays and Allinson (1988) discuss that the culture of a country is a more macro level of external environmental condition than those that are immediate societal systems like family, school, and work, suggesting that culture may also be one of the powerful socialization agents that have a great impact upon the development of learning styles. Hofstede (1997) argues that a country's culture shapes its peoples' preferred modes of learning through their socialization experiences. Pratt (1991) claims that learning styles may be distinguishable across cultures based on his comparative study of self-conceptions between Chinese and Western societies. More recently, De Vita (2001) suggests that there is little room for doubt about cultural effects upon the development of learning styles because culture shapes peoples' perception, cognition, and behavior.

In the task of examining cross-cultural differences in learning styles and cross-cultural learning programs, Kolb's (1984) experiential learning theory (ELT) has
attracted remarkable attention and has been applied in the fields of cross-cultural and international studies (Hughes-Wiener, 1986; Hanpol, 1987; Katz, 1988; Sanders, 1988; Hayes and Allinson, 1988; Hoppe, 1990; Rhodes, 1990; Algee and Bowers, 1993; Yuen and Lee, 1994; Auyeng and Sands, 1996; McMurray, 1997; Hayashi, 1999; Ruksasuk, 2000). While several cross-cultural ELT studies have suggested that learning styles may differ among various cultures, there has been very little comprehensive research aimed at understanding what kind of culture affects the development of certain ELT learning styles. The present study explores this question. Towards this end, this study concentrates on a theoretical and empirical comparative-analysis between ELT learning styles and six cultural typologies presented in three study areas: anthropology, cross-cultural management, and cross-cultural psychology.

Rationale for Study

Is individualism related to a particular learning style? Is strong uncertainty avoidance related to a particular learning mode? Only two studies have discussed the relationship between a type of culture and its learning styles. These studies, however, focused only on the relationship between one or two cultural types and two of the four learning modes encompassed by ETL learning styles. Hoppe (1990) conceptualized and tested the relationship between Hofstede’s two cultural dimensions: uncertainty avoidance and masculinity, and Kolb’ two learning modes: reflective observation (RO) and active experimentation (AE). Auyeung and Sands (1996) discussed and tested the relationship between individualism vs. collectivism and the same two learning modes of RO and AE as Hoppe did. However, there are other, different, types of cultures in the
world, such as; high-low context cultures, shame vs. guilt cultures, etc., and there are four learning modes reflected within ELT learning styles. This paper links the differences among such cultural models and all four learning modes of ELT learning styles. It does so in order to pursue a hitherto unasked complexion: which culture is related to which learning style of Kolb’s ELT?

While a handful of studies have been done connecting the work of cross-cultural researchers to ELT learning styles, no one has yet ventured farther out to include the cultural perceptions of anthropologists, like Edward T. Hall or Ruth Benedict; or those of organizational analysts. The cultural typologies suited for linkages with Kolb's ELT are indeed much vaster than previously thought. This study embarks on an original examination of the cultural views put forth in such theories and their potential, fecund and useful relationship to learning styles as theorized by Kolb. In addition, new paradigmatic models for learning styles within certain cultures can also be discerned. My discussion of interdependent-self vs. independent-self dimension – a cultural typology conceptually similar to individualism vs. collectivism; and, its concomitant cultural dimensions – reveals that there are two additional, new learning modes that can be conceptually associated with it.

**A Note on the Methodology**

Learning styles are shaped, changed, and developed by the interplay between external environments and internal characteristics (Kolb, 1984). While we are beginning to understand that culture shapes learning styles, we still do not yet really know which culture shapes which mode of learning styles. The first half of this study thus attempts a
more comprehensive analysis of the conceptual relationship between six cultural
typologies and ELT learning styles. These six cultural typologies are: Hall’s low-high
context culture, Benedict’s shame-guilt culture, Hofstede’s uncertainty avoidance,
Hayashi’s O-M organizational types, Markus and Kitayama’s interdependent self vs.
independent self dimension, and Witkin’s cognitive styles. No one has yet discussed how
Hall’s low-high context culture, Benedict’s shame-guilt culture, and Hayashi’s O-M
organizational types are theoretically and empirically related to ELT learning
styles. Although the relationship between Witkin’s cognitive styles and Kolb’s ELT has
been examined in professional fields such as nursing (Murphy, 1991), this study focuses
on Witkin’s model as an important cultural typology and discusses the relationship
between them.

The methodology I employ in the second half of this study is to conduct a meta-
analysis of the quantitative data of Kolb’s (1976, 1985, 1999) Learning Style Inventory
(LSI) that were complied by a variety of researchers over time, and, in several different
countries. Specifically, I will be looking at what their results tell us about cultural
differences and about the relationship between a type of culture and its learning
styles. With the exception of the two studies, that of Hoppe (1990), and that of Auyeung
and Sands (1996); most of the previous cross-cultural ELT studies did not formerly, and
thoroughly, discuss why the results of their LSI data were skewed toward a certain
learning mode; or, toward a particular learning style in light of cultural differences. The
meanings of the arithmetic mean of LSI data, as well as those of the distribution of
learning styles, or modes, of LSI data, have not been mined for what they can reveal
about cultural differences. In this paper, I concentrated on and reanalyzed the LSI
arithmetic means or the LSI distributions of the works in the previous cross-cultural ELT studies, thus enacting in this study, a comprehensive synthesis such that the data can be used and applied to the analysis of the relationship between cultural types and learning styles in a new way.

Finally in this section, it is important to acknowledge the work of predecessors such as Katz (1989), and Yuen and Lee (1994), who have demonstrated cultural differences in ELT learning styles by referring to a cultural, or socio-environmental, reason for the skewness of their LSI data through cultural comparisons of the LSI data of American samples in previous ELT studies. Such research has been conducted in the service of aiding understanding about the utility of applying Kolb’s ELT and the LSI into other countries. Their results, however, can also be usefully be reinterpreted toward the end of reaching new insights about culture per se and about the relationship among cultures, proximate societal environments, and learning styles. Before exploration of the inquiry about how the six cultural typologies are conceptually related to Kolb’s learning model, a brief explanation of Kolb’s learning model will be useful for further discussion.

**Kolb’s Experiential Learning Theory**

Experiential learning theory represents Kolb’s assimilation and integration of the experiential works of Dewey, Lewin, Piaget, James, and Freire. It focuses on the central role of experience in the human learning processes. Kolb (1984) argues that ‘learning is a holistic process of adaptation to the world’ (p.31). His experiential learning model embodies this proposition and encompasses the totality of human learning through feeling, reflecting, thinking, and doing (Kolb, 1984). His holistic learning model lends itself well
to exploration of cultural differences in that ELT goes beyond narrowly defined concepts such as problem solving or decision-making and rather broadly concerns the wholeness of human life (Hoppe, 1990). Because of this holistic characteristic, cross-cultural researchers in learning, education, or management have studied ELT in order to examine learning styles across different countries and cultures.

The experiential learning process

Kolb (1984) defines learning as ‘the process whereby knowledge is created through the transformation of experiences’ (p.41). According to ELT, learning requires persons to resolve a dialectic confrontation both when they grasp experience and when they transform experience (Kolb, 1984; Kolb and Fry, 1975). The first dialectic concerns how persons grasp experience. At one end of the dialectic is apprehension, relying on the tangible, felt qualities of here-and-now experience through sensory perception. In contrast, comprehension is the other extreme and depends upon abstract concepts and symbolic representation through logical and analytical cognition.

The other dialectic that needs to be resolved by the learner is in the transformation of experience. Intention, one extreme way of transforming experience, refers to the process in which persons internally reflect upon apprehensive or comprehensive experiences. Extension is the other opposite way and pertains to the process whereby persons actively move to the external world in order to test knowledge or theory created from the apprehension or comprehension process.

Kolb’s learning model also provides another characteristic of the human learning process. Kolb (1984) explains that persons, when learning, touch the bases of four adaptive learning modes that form the experiential learning cycle (Mainemelis, Boyatzis,
and Kolb, 1999). Immediate concrete experiences (CE) make the basis for observation and reflection (RO), which subsequently transforms the apprehensive experiences which are then assimilated into abstract conceptualization (AC), from which active experimentation (AE) is deduced. This active experimentation then entails creating here-and-now concrete experiences. When the cycle is completed, it begins anew.

**The learning styles**

The most fundamental form of learning styles is a combination of two adaptive learning modes, producing four basic types of learning styles (Kolb, 1984; Kolb and Fry, 1975). The Diverger learning style specializes in the two modes CE and RO. The greatest abilities inherent in this style are imagination and the awareness of values and meanings. Divers can greatly see an overall picture from many various perspectives based on concrete situations and can be harmonized with their surroundings and people with an open-minded approach. In contrast, the Converger learning style specializes in the two modes AC and AE. The strongest abilities of this learning style reside in the practical application of ideas, abstract concepts, and plans. Convergers can be controlled in their expression of emotion and prefer dealing with technical tasks and issues rather than interpersonal challenges.

The Assimilator learning style specializes in the two modes AC and RO. The greatest strength of this learning style consists in the ability to create theoretical models. Assimilators can perform inductive reasoning well and focus their interests upon ideas, abstract concepts, and plans. They tend to be less interested in the practical applications of theories as their prime concern about theories lies in their logical soundness and preciseness. In contrast, the Accommodator learning style specializes in the two modes
CE and AE. The strongest abilities of this learning style pertain to taking actions and achieving plans and tasks by a trial-and-error approach. Accommodators possess the ability to fully open new experiences that result from their active experimentation. They are good at making human relationships but are less concerned about logical ideas and precise theories.

In summary, ELT provides a holistic model that deals with the totality of the human learning process whereby experience plays a very important role in the foundation for feeling, reflecting, thinking, and acting. Figure 1 is described as Kolb’s experiential learning model.

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Insert Figure 1 about here

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Cultural Typologies in Anthropology

Anthropologists compare the modes of thoughts in a societal level of analysis and suggest that the culturally dominant ways of thinking vary from one society to another, in much the same way that learning styles differ from one person to another. Here, the cultural typologies of Edward T. Hall and Ruth Benedict will be discussed concerning how each of these two typologies is conceptually related to Kolb’s learning model.

High-context vs. low-context cultures

Hall (1976) proposed a cultural classification of high-context culture and low-context culture, based on how in each of which individual identity rests on total communication frameworks such as verbal and non-verbal expressions, perceptual ways,
and behavioral patterns. In high-context culture, surrounding situations, external physical environments, and non-verbal behaviors are important for its members to determine the meanings of messages conveyed in communication. Covert clues provided in these contexts make differences to the members and are used to search for a real meaning or a hidden meaning beyond verbal messages. Interpretation of meanings under implicit communication patterns depends heavily upon contexts where its members are situated in the here-and-now. Under these communication patterns, the members tend to be related to each other in relatively long lasting relationships with strong bonds. Japanese, Chinese, Arabic, and Native American societies are categorized as high context cultures.

Concrete experience of those who are embedded to proximate contexts is a key foundation for making communicative frameworks in high-context culture. In this sense, communication patterns in high-context culture are conceptually associated with the adaptive learning mode of concrete experience (CE). High-context culture requires its members to become sensitive to immediate environments through perceptual sensors and feelings. For their effective communication, its members need to be situated in a specific surrounding circumstance, which results in producing apprehensive knowledge that serves to distinguish covert cues. Such apprehensive knowledge depends on the ability of its members to accurately read these messages while encountering situations with little misunderstanding among the members. This kind of knowledge relies on the CE mode and is acquired through the process of apprehension in Kolb's learning model. In addition, interpersonal relationships are crucial in high-context culture. This trait is also congruent with the CE mode in which persons cherish interpersonal relationships or human orientation. Empirical ELT research has substantiated the significant correlation
between the CE mode and human relationship abilities (Boyatzis and Kolb, 1995; Mainemelis, Boyatzis, and Kolb, 1999). It would be reasonable to conclude that high context culture is associated with the CE mode; therefore, its members tend to learn through feeling in proximate contexts whereby they are situated concretely.

In low-context culture, surrounding situations, external physical environments, and non-verbal behaviors are relatively less crucial in generating and interpreting meanings, whereas explicit verbal messages are more important in communication (Hall, 1976). Most information is conveyed in explicit codes; thereby, explicit communicative styles in logical forms are valued to a high degree. Interpersonal relationships in low-context culture last for a relatively shorter period, and peoples' bonds tend to be easily broken. Western societies such as found in the United States, Switzerland, and Germany represent low-context cultures.

Communication patterns of low context-culture are conceptually associated with the AC mode to the extent that abstract and symbolic presentation in logical forms performs as central and significant methods of communicating with others in low-context culture. In order to spell out messages clearly and avoid misunderstanding, its members are required to form socially communicable ideas and concepts in the AC mode. The members need to learn and develop abilities of dealing with these coded ideas and concepts as communicative knowledge that is created through comprehension processes in the AC mode. The communication patterns of low context culture focus less on interpersonal relationships while increasing emphasis on rationally detached analyses. These traits also agree with the characteristics of the AC mode. Low context culture would have conceptual similarities to the AC mode; thus, those with low-context culture
are likely to learn by logical thinking and analytical cognition.

**Shame vs. guilt cultures**

Many cross-cultural researchers discuss an important relationship between culture and emotion (Kitayama and Markus, 1994). Based on a comparative study between Japanese and Western societies, Ruth Benedict (1946) classified cultures using the particular emotions: shame and guilt. She stated that Japan is representative of shame culture while Western society exemplifies guilt culture. To the extent that emotions involve concrete experience in a specific event where persons are situated or behave themselves, shame and guilt cultures are seemingly associated with only the CE mode in the learning process. Yet close examination of processes of eliciting shame and guilt emotions would make it possible to discriminate these two emotions according to different adaptive learning modes within Kolb’s ELT.

The culture of shame, whose emotion is a reaction to criticism of real or imaginary audience, is deeply embedded in external sanctions and environments for good behavior, and it places emphasis on outward standards of behavior (Benedict, 1946). Doi (1976) explains a further aspect of shame process, describing that shame originates in an individual’s strong awareness of the outside world and requires the individual to feel intensely that others are watching him or her. In this sense, shame process heavily depends on individual concrete experience, along with an intense consciousness about surrounding audience and environments. It has nothing to do with a logical analysis of one’s own behavior when shame is aroused. Since concrete experience is a primal mode necessary to produce shame emotion as an immediate psychological reaction about one’s behavior, shame process is more associated with the CE mode than the AC mode.
Moreover, examination of shame experience as a knowledge type will reinforce a perspective of the relationship between shame and the CE mode. Several researchers argue that shame experience is difficult to describe (Tangney, 1995; Frijida and Mesquita, 1994) and that the internalized criticism caused by shame is not vocal but operates utilizing a visual image of the other (Emde and Oppenheim, 1995). We can deduce from these arguments that shame experience is fundamentally involved with apprehensive or tacit knowledge acquired in the CE mode in that apprehensive or tacit knowledge is elusive and hard to describe. Taken together, shame culture where its members feel shame to a high degree is strongly and conceptually related to the CE mode. Its members would consequently reveal results when tested exhibiting their learning preference of the CE mode.

In contrast, guilt culture relies on the development of an individual conscience that entails an absolute moral standard of society, and it stresses inner standards of behavior within the self rather than outer standards dependent on audience (Benedict, 1946). Development of inner standards important to determine moral behavior must require individuals to use the mode of abstract conceptualization with an explicit and logical form of verbal expression. Because the AC mode is a primary key to develop and establish inner standards that are describable in language, guilt culture is essentially associated with the AC mode. Supporting this conception is the idea that guilt process concerns an analysis of an internal incompatibility between specific behaviors and established inner standards (Doi, 1979). Such an analysis imposes the use of verbal expression on individuals in the AC mode and evolves into internalized criticism that works with inner voice in the self (Emde and Oppenheim, 1995). Internalized criticism
involves critical thinking and analytical cognition so that the AC mode will be highly activated in guilt process. Consequently, the development of inner standards and the aspects of internalized criticism would enable us to conclude that guilt culture is conceptually related to the AC mode. Its members will be likely to display their learning preference of the AC mode.

Cross-Cultural Management Literature

Cross-cultural management literature presents cultural differences in values, perceptions, cognitions, and behaviors in organizational settings. Hofstede’s cultural dimension of uncertainty avoidance also seems to possess a conceptual similarity with Kolb’s learning model. This section will first deal with an examination of the relationship between them. The second cultural typology to be explored within this field will be Hayashi’s comparative cultural model of American and Japanese organizations. This will also be investigated to reveal the way in which his cultural classification is reflected in Kolb’s learning model.

Uncertainty Avoidance

Hofstede’s cultural model is very influential upon international and cross-cultural management fields. Of his four cultural classifications, the dimension of uncertainty avoidance holds a conceptual relationship with the learning dimension of transforming experience in Kolb’s ELT (Hoppe, 1990). Hofstede (1997) defines uncertainty avoidance as ‘the extent to which the members of a culture feel threatened by uncertain or unknown situations’ (p.113). Organizational members in strong uncertainty avoidance countries have a feeling of anxiety or fear when encountering unfamiliar risks, deviant ideas, or
conflicts in their work place. Those members tend to take time for action until they acquire knowledge and information enough to reduce and resolve unclear and unstructured situations. Elimination of psychological anxiety from their work place is a primary concern for the members. In Kolb’s learning model, those who prefer the mode of reflective observation (RO) are likely to watch carefully and reflect on their experience and observations. Because of this disposition, RO persons relatively take time before actions and develop abilities of collecting information on various perspectives. Their main concern is about avoiding failure and errors involving sacrificing chances of successful performance. It seems obvious that there exists a conceptual similarity between the strong uncertainty avoidance of Hofstede’s cultural dimension and the RO mode of Kolb’s ELT. Its cultural members will be inclined to the RO mode as their learning preference and will learn best from watching, listening, and observation.

In contrast, organizational members in weak uncertainty avoidance countries tend to feel less uncomfortable in unclear and unstructured circumstances and are more likely to take risks in unfamiliar situations where encountering deviant and innovative ideas and behavior with no rules (Hofstede, 1997). Achievement in their work place functions as a great motivational factor, and it encourages and facilitates those members to take actions in either familiar or unfamiliar situations for their success. In Kolb’s model, those of the active experimentation (AE) mode learn through action taking, risk-taking, and practical application. The major concern of active learners is not about avoiding failure or making errors but rather about maximizing success (Kolb, 1984). It would be logical to state that the culture of weak uncertainty avoidance is involved with the development of the AE learning mode. Its members will have a tendency to show their learning preference of the
AE mode.

Hoppe’s (1990) empirical research supported the relationship between the cultural dimension of uncertainty avoidance and the learning dimension of the AE-RO modes. The analysis of the data of 1,544 respondents from 19 countries illustrates that the active learning mode is more related to weak uncertainty avoidance, whereas the reflective mode is more often linked with strong uncertainty avoidance. His study proved that the AE-RO dimension is significantly associated with the dimension of uncertainty avoidance.

**M-type organizations vs. O-type organizations**

Hayashi (1999) proposes two cross-cultural organizational classifications: M-type organizations and O-type organizations, by primarily using the concept of high-low context cultures. According to his typology, American, or Western organizations are typical of the M-type while Japanese organizations are regarded as the O-type. M-type organizations possess clear job boundaries for any individual, section, and department level. Within these boundaries, each of the job descriptions and responsibilities is explicitly defined and spelled out through the use of verbal expressions. It is assumed that its members can know their specified jobs and areas through analytical cognition that allows the members to make clear segmentation of the world with logic and words. Its members seem to be required to develop analytical cognition that is essentially rooted in the AC mode. Additionally, Hayashi (1999) discusses that M-type organizations are more task-oriented and less people-oriented. These characteristics of M-type organizations conceptually match those of the AC mode of Kolb’s learning model. Again, those who prefer the AC mode are likely to learn through logical and analytical thinking.
strategies and will show task-orientation instead of interpersonal-orientation. M-type organizational members, thereby, will exhibit their learning preference for the AC mode.

In contrast, O-type organizations do not have explicit job boundaries and descriptions in their work place (Hayashi, 1999). Nevertheless, it is clear to such members what their assigned job areas and responsibilities are, based on job experiences in the organization where they share information through numerous formal and informal face-to-face channels. Concrete experience of their jobs and interpersonal relations makes a considerable difference in acquiring the proper knowledge to survive and work well in the organization. In terms of cognition, O-type organizational members tend to perceive reality by analogue cognition that allows them not to segment the world but to see the world in simultaneous fashions as a whole (Hayashi, 1999). This characteristic of cognition is very similar to that of the CE mode in such a way that those persons see the world as wholeness or timelessness by grasping experience through the apprehension process. Furthermore, because of the relatively close relationships between the members, O-type organizations are people-orientated rather than task-orientated (Hayashi, 1984). People orientation is an attribute of the CE mode whose persons tend to prefer interpersonal and social issues to task issues. All of these characteristics of O-type organizations are congruent with those of the CE mode. As a result, O-type organizational members will display their learning preference of the CE mode.

Cross-Cultural Psychology

Cross-cultural psychology makes comparative studies of cognition, emotion, and motivation across cultures. In the domain of cross-cultural psychology, two cultural
typologies are theoretically associated with the adaptive learning modes of Kolb’s ETL. One typology focuses on culturally different self-construals of interdependent-self and independent-self presented and is discussed by Markus and Kitayama (1991), whereas the other is Witkin’s (1976) cognitive style of field-dependent and field-independent.

**Interdependent-self vs. independent-self**

Markus and Kitayama (1991) examined the self-construal of different people across cultures and proposed interdependent-self and independent-self, each of whose attributes differs among cultures. Interdependent-self is represented as the self-construal of people in Asian, African, Latin American, and Southern European cultures, while independent-self is exemplified as the self-construal of those in Western cultures. This cultural dimension of interdependent-self vs. independent-self is analogous to that of collectivism vs. individualism as categorized by Triandis (1997) and Hofstede (1997).

Interdependent-self is viewed as interdependent or connected to the surrounding social contexts where the self and others are concretely situated. Experience of interdependence with others makes people see themselves not as detached from the social context but as part of an encompassing social context with its concomitant personal relations. Because those with interdependent self have the strong sense of belongingness to social contexts and relationships, they are likely to perceive that relationship is ‘the functional unit of conscious reflection’ (Markus and Kitayama, 1991, p.226). Internal attributes such as abilities, opinions, judgments, and personality are understandable within specific situations; therefore, outside the specific contexts in which they are displayed, these attributes are sometimes elusive and unreliable. Since maintaining one’s relationships and one’s harmonious social behaviors make a difference in the social life
of those with interdependent-self, interdependent-self persons are required to be very sensitive to others’ feelings and thinking and are likely to develop their capacity to acquire dense information about others and their selves in relation.

These characteristics of interdependent-self seem to be theoretically linked with two modes on Kolb’s learning model: that of concrete experience (CE) and that of reflective observation (RO). People who exhibit their learning preference of the CE mode rely upon the tangible, felt qualities of here-and-now experience through sensory perception. Their immediate environments rather than universalistic conceptual symbols are so important to learning acquisition that CE persons have a strong awareness of connectedness with the concrete external world including social contextual circumstances. Because the CE is naturally strong in its sensitivity to others, CE persons tend to develop interpersonal abilities such as understanding the feelings and values of others. Consequently, it could be reasonable to infer that people with interdependent-self are likely to express their learning preference of the CE mode of Kolb’s ELT.

In the RO mode, people are required to watch and listen to others with great carefulness and to reflect upon their observations in their minds. They tend to spend time for reflection with subtle observations before taking actions and expressing themselves to others. With regard to learning skills and abilities, the RO learning mode entails developing the ability of collecting information from various resources. Those with interdependent-self are likely to base the relationship with others as a crucial and functional component of conscious reflection (Markus and Kitayama, 1991). These persons have a strong tendency to seek information about others’ perception about the self in relation, which results in developing a dense, and important store of collected
information in their mental capacity. This characteristic of competency development accords with that of the RO mode. Consequently, interdependent-self is conceptually related to the RO mode; thus, people with interdependent-self will prefer to learn from watching and reflecting in the RO mode of learning.

In contrast, independent-self seems to be associated with the two learning modes of abstract conceptualization (AC) and active experimentation (AE) of Kolb's model. Independent-self, the Western notion of self, is seen as an entity that contains important characteristic attributes and as that which is separate from context (Markus and Kitayama, 1991). There is a belief that people are inherently detached and distinct in many Western cultures where the cultural norm is to become independent from others and to express one's uniqueness. Although people with independent-self must be responsive to surrounding social circumstances, their social responsiveness arises relative to their need to determine the best way to display the inner attributes of the self.

For self-actualization and expressing one's uniqueness, independent-self involves the two learning modes of AC and AE. When showing their own ideas and thoughts as individual unique entities, such persons are required to put reliance upon clear concepts and distinct logic in their minds. Markus and Kitayama (1991) discuss how people with independent-self relatively rarely use context-free descriptions and abstract concepts such as psychological traits or attribute characterizations when expressing the self or others. They argue with Cousins (1989) that abstract or generalized characterizations are reflected into an assertion of being an independent individual whose nature is free from a concrete situation. This characteristic of independent-self, therefore, requires more focus to be paid to the AC mode rather than to the CE mode. It will make those with independent-
self prefer to learn through abstract cognition in the AC mode of learning.

To the extent that the expression of one's uniqueness and the achievement of self-actualization as characteristics of independent-self will not be completed without actual behaviors, independent-self is very importantly related to taking-actions with external environments where they can express their own thoughts. In this sense, there is little room to doubt that expressing uniqueness and self-actualization entail taking actions in reality. Since persons of the AE mode are required to actively move to the outer world in order to test their ideas and thoughts that are created through the comprehension process, independent-self is clearly associated with the AE mode. Those with independent-self will relatively become active learners and tend to prefer to learn from taking action in the AE mode of learning.

Field-dependent and field-independent

Witkin’s (1979) cognitive styles of field-dependent and field-independent have influence upon cross-cultural studies of psychological development across cultures (Goodenough, 1986). His theory illustrates that the ways of rearing children in cross-cultural differences, the level of social conformity, or the societal differences between agricultural and hunting orientations determine whether individual cognitive styles are of the field-dependent mode or of the field-independent mode (Witkin, 1979). Originally, his examination concerned two different ways of perception on an assigned problem: field-dependent people rely more on surrounding visual cues and less on bodily cues in resolving cue conflicts than do field-independent people. Based on this finding, Witkin and his colleagues have developed cognitive and interpersonal behavioral differences between field-dependent and field-independent people (1979; Goodenough, 1986). The
following discussion will show that Witkin’s cognitive classification is conceptually and empirically associated with the CE and AC adaptive modes of Kolb’s learning dimension of grasping experience.

Field-dependent people are likely to depend on immediate contexts for solving problems and to comply with dominant properties of the field (Witkin, 1976; Goodenough, 1986). The less autonomous functioning of field-dependent people facilitates them to possess social and interpersonal orientations with great emotional openness in communication with others. Field-dependent people prefer to be in a situation where they interact with others, prefer to help others, and have concerns for others. The occupational choice of field-dependent people is oriented typically to the social in content and with interpersonal relations in which they develop interpersonal skills and competencies. In Kolb’s learning model, persons with the CE mode fully open new experiences without bias, grasp figurative representation from immediate experiences, and connect themselves to the outer world. The abilities of CE people involve social and interpersonal relationships. Thus, it would be reasonable to say that field-dependent people are likely to prefer to learn through the CE learning mode.

Field-independent people have psychologically defined boundaries between their inner self and their outer self (Witkin, 1976). Segregation of the self from the field results in a greater determination of behavior from the internal self and a diminished reliance on external sources of guidance. The autonomous functioning of field-independent people enables them to rely on symbolic representations in their cognition when they are required to deal with tasks. Field-independent people favor abstract activities that they are able to pursue on their own, develop cognitive restructuring skills,
and are likely to have an impersonal orientation. In contrast to field-dependent people, field-independent people seem to be related to the abstract conceptualization mode of Kolb's model. The AC persons rely upon abstract concepts and symbolic representation through logical and analytical cognition. They also tend to have more task orientations with dispassionate analyses than social and interpersonal orientations. Field-independent people will thereby show learning preference of the AC mode. To support this discussion, Murphy (1993) empirically tested the relationship between Kolb's learning model and Witkin's cognitive styles, and found that field-independence is significantly correlated to the AC mode while field-dependence is significantly associated with the CE mode. Her examination positively supports the perspective that Witkin's cognitive styles are associated with the AC-CE learning dimension of Kolb's model.

In sum, the theoretical examination seems to tell us that the six typologies of cultural differences have some conceptual similarities with ELT learning modes; thus, the cultures of these typologies may serve to affect the development of learning styles whose characteristics are congruent with those of the culture. Table 1 summarizes the discussion of the relationship between the six cultural typologies and Kolb's model.

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**Empirical Cross-cultural ELT Studies**

Several cross-cultural ELT studies in the past provide us with their empirical, quantitative data that can be usefully reanalyzed to find out which learning style or
learning mode is dominantly preferable in the previously researched country or society. With reference to this second discussion, correct quantitative interpretation derived from the numerical data and reports of other researchers is a key strategy that must be employed in order to link learning modes to cultural traits. The result of one cross-cultural ELT analysis, however, may be precisely incomparable with that of another cross-cultural ELT study because of different demographic characteristics or because of the different ways of describing results of learning styles measured by Kolb’s (1976, 1985, 1999) Learning Style Inventory (LSI). This inventory was invented and designed to examine differences in individual learning styles. Yet, analyses of the results of the previous cross-cultural ELT studies can in fact convince us that certain learning styles within one country are developed in learning environments that are influenced by its particular culture. The following presentation focused on the empirical, quantitative ELT results of nine countries and one society with discussion of how these empirical results are reflected in the investigated cultural typologies. The nine countries examined are: Japan, the United States of America, Israel, Singapore, Hong Kong, Taiwan, Australia, Thailand, and Papua New Guinea. The society examined belongs to that of Native American Indians.

**Japanese learning styles**

Most of the aforementioned cultural investigators in the six cultural typologies exemplify Japanese culture as one extreme pole in their cultural dimensions: that is, as a high-context culture, a culture of shame, strong uncertainty avoidance, O-type organizations, and an interdependent-self culture (collectivism). Learning modes common to the previously detected cultural typologies of the Japanese could be defined
as those utilizing the modes of concrete experience (CE) and reflective observation (RO). The combination of these two learning modes comprises the learning style known as 'Diverger.' One cross-cultural ELT study deals with investigation about Japanese learning styles and reports the LSI distribution of their learning modes.

McMurray (1998) examined the learning styles of 160 Japanese undergraduate students with Economics and Science majors, and found that the learning preferences of Japanese subjects were stable during two consecutive semesters and were skewed toward the CE and the RO modes. In the spring semester of 1997, 39% of the total students were inclined to the CE mode, 36% to the RO mode, 15% to the AC mode, and 10% to the AE mode. In the fall semester of 1997, 40% had a preference for the CE mode, 36% for the RO mode, 17% for the AC mode, and 7% for the AE mode. Table 2 shows the result of McMurray’s study about Japanese students.

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Insert Table 2 about here
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These data strongly suggest that the dominant learning style of Japanese students tends to be Diverger, made by the combination of the CE and the RO modes; while Converger, made by the combination of the AC and the AE modes probably represents the minority of their learning styles. Because students majoring in Economics or Science are likely to prefer to learn through the AC mode and the AE mode in general, based on my reanalysis of the LSI distribution by undergraduate college majors that Kolb and Fry (1975) reported, McMurray’s result should be discernible in terms of cross-cultural differences. The result is greatly reflected in Japanese culture, norms, and traits.
described in the discussed cultural typologies, and it is matched to the two learning
modes: CE and RO, which are hypothetically deducted from the conceptual similarity
between those cultural typologies and ELT learning styles.

American learning styles

To facilitate a cross-cultural comparison more empirically, it will be intellectually
-crucial to analyze American learning styles that are regarded as a comparative standard of
the interpretation of cross-cultural LSI data. In addition, American culture is largely
contrasted with Japanese culture as elucidated in the investigated cultural typologies. To
wit, it is characterized by low-context culture, the culture of guilt, weak uncertainty
avoidance, M-type organizations, and the independent-self (individualism). My
theoretical examination in the first part of this paper generated the proposition that those
cultural types are associated with the modes of abstract conceptualization (AC) and active
experimentation (AE); the combination of which leads to the Converging learning style.
Five studies of American learning styles, including the normative scores of the LSI, will
be focused on in order to reanalyze their presented mean scores of AC - CE and AE - RO.
This reanalysis clearly, and importantly, describes to what extent each of the two learning
modes is more dominant in learning situations. Prior to the discussion of these five
studies, it will be useful to explain how the values of the arithmetic means of AC - CE
and AE - RO are interpreted.

The greater the value of AC - CE is toward 27, when you use the original 9-item
LSI, or toward 36, when you employ the revised 12-item LSI, the more preferable will be
the abstract mode to the concrete one in learning situations. In contrast, the smaller the
value of AC - CE is toward -27 in use of the original LSI, or toward -36 in use of the
revised LSI, the more preferable the concrete mode will be to the abstract one. Similarly, the greater the value of AE - RO is toward 27 or 36, the more preferable the active mode is to the reflective mode. In contrast, a larger negative value for AE - RO suggests a preference for the reflective mode rather than the active one. In this study, I will use the standard of AC - CE = 0 and AE - RO = 0 that makes it possible for us to evaluate cross-cultural differences in learning styles.

The first analysis of American learning styles starts with the examination of the scores reported by Smith and Kolb (1985) taken from 1,446 American samples. Their result shows the LSI score means of CE = 26.0, RO = 29.9, AC = 30.3, AE = 35.4, AC - CE = 4.3, and AE - RO = 5.9. These data suggest that the overall American subjects are shifted more toward the AC and the AE mode in this cross-cultural standard of AC - CE = 0 and AE - RO = 0. Thus, Converger may be a typical learning style of the American samples as a whole.

Ruble (1990 in Yuen and Lee, 1994) studied the learning styles of 312 American undergraduate students and presented the LSI mean scores: CE = 23.7, RO = 31.9, AC = 30.3, and AE = 34.1. Mean score differences of AC - CE is 6.6 and those of AE - RO is 2.2. The result of his research also reveals that the American undergraduates have an overall tendency of exhibiting learning preference for the Converging learning style.

Kolb and Fry (1975) presented the LSI scores of 480 managers or prospective managers who had different concentrations as undergraduate majors: the mean of AC - CE is 4.5 and that of AE - RO is 2.9. Since these mean scores reported by Kolb and Fry were examined by the original 9-item LSI; it is necessary to mathematically convert their presented scores into the equivalent values of the 12-item LSI, thus providing a revised
version. This step is necessary so that we can compare all of the LSI scores more correctly no matter which LSI was used in the previous ELT studies. The mean of AC - CE is changeable from 4.5 to 6 and that of AE - RO from 2.9 to 3.9. It is obvious that these samples are inclined toward the AC and the AE modes as a whole and that the Converger may be representative of their learning styles. Kolb and Fry state that professional managerial careers, and graduate majors within this field, accentuate learning styles to the AC and the AE learning modes. It would be inferable that American learning styles in general seem to be less abstract and active than those of the manager samples.

Geiger and Pint (1991) examined change of learning styles in 40 American undergraduate business majors at an American university. They used a longitudinal research design with which to measure students' learning styles at three times: during sophomore, junior, and senior years. The reported LSI scores show that these undergraduates expressed a learning preference for more abstract and more active orientations on the whole. The mean difference of AC - CE is 8.95 and that of AE - RO is 1.55 at the second year; that of AC - CE is 12.28 and that of AE - RO is 1.23 at the third year; that of AC - CE is 10.75 and that of AE - RO is 2.75 at the fourth year. All of these statistics indicate that the samples' learning styles tend to lie in the Converger.

Finally, Boyatzis and Mainemelis (2001) investigated the learning styles of entry-level MBA students of an American graduate school. Six hundred and seven full time students as a whole lean to the Converger because of the mean score of AC - CE = 7.48 and that of AE - RO = 4.82. Six hundred seventy nine part time students are further shifted toward the Converging learning style; the mean score of AC - CE is 11.01 and
that of AE - RO is 6.87.

All of the five research studies on American subjects show that these subjects are more abstract and active learning modes and tend to prefer the Converging learning styles. Table 3 exhibits the summary of the five researches.

Insert Table 3 about here

Although it is essentially important to consider demographic characteristics of those samples on account of the influence of immediate social environments and educational specialization upon the development of learning styles (Kolb, 1984), we may be able to say that American learning styles are inclined to the AC and AE modes, especially when looking at the LSI data of Smith and Kolb (1985) as being American normative scores. This view seems to accord with the two learning modes: AC and AE, that were conceptually deducted from American cultural characteristics such as low context culture, the culture of guilt, the weak uncertainty avoidance, M-type organizations, and the independent-self. As that of the Japanese LSI data will do so, the reanalysis of these LSI data about American samples will contribute to a positive support to the notion that these aforementioned cultural types are related to the two learning modes of AC and AE.

Israeli learning styles

According to Hofstede’s (1994) cultural dimensions, Israeli culture is relatively individualistic with comparatively strong uncertainty avoidance. The culture of individualism, analogous to cultures that display independent-self, is theoretically related
to the two learning modes of AC and AE. However, the element of strong uncertainty avoidance conceptually emphasizes the learning mode of RO. These cultural elements thereby enable us to deduce that Israeli learning styles are, in fact, more abstract; and, may not be oriented toward a greatly polarized mode in the dimension of AE and RO. What follows below describes how the LSI data of Israeli learning styles presented by Katz (1988) can be usefully reinterpreted in terms of the relationship between Israeli culture and ELT learning styles.

Katz (1988) examined the learning styles of 821 Israeli subjects by using the original 9-item LSI and drew the conclusion that the interplay between typical Israeli norm, or culture, and learning style is evident in the orientation toward the AE mode. Her cross-cultural comparison of learning styles between Israel and the United State revealed that the Israeli mean of AE - RO = 4.27 is far more skewed toward the active mode than the American mean of 2.9 reported by Kolb and Fry (1975; Kolb, 1976). This evidence may suggest an argument against the perception that the typical Israeli learning style is developed with no extreme preference for either the RO or AE mode. This learning orientation may stem from powerful societal, cultural, or environmental forces, which give impetus to the development of a strong active mode. The acquisition of such a preference seems, in fact, necessarily congruent with the learning style characteristic of an independent-self culture. In addition, it also tends to overwhelm that of strong uncertainty avoidance. Katz (1988) quite specifically offered the explanation that this skewness results from characteristics of Israeli culture: aggressiveness, outspokenness, a high energy level, and action orientations. This active culture itself must be directing Israeli learning orientation to the AE mode. It should be noticeable that a socio-cultural
factor like Israeli active culture could involve, in depth, the AE and RO learning
dimension. Importantly, this perspective will tell us that there exists a strong connection
between a culture and the AE and RO dimension.

With respect to the other learning dimension examined, the mean score of AC -
CE was 4.22. It has been construed that this means that Israeli subjects, like the
American subjects, are more abstract. This LSI mean score will convince us that the
learning characteristic derived from an independent-self culture is related to the AC mode.
The combination of the AC and the AE modes will create the Converging learning style,
which may represent a learning style typical of Israelis on the whole. Table 4 illustrates
the LSI results of Katz’s research. The number in the parentheses can be comparable to
other LSI data examined by using the revised 12-item LSI in this paper.

Insert Table 4 about here

Singapore learning styles

The culture of Singapore is classified not only as one with a strong collectivism,
which is conceptually associated with the interdependent-self, but also as one with
extremely weak uncertainty avoidance in particular, as illustrated in Hofstede’s (1994)
cultural investigation. The interdependent-self culture is hypothetically associated with
the two modes of CE and RO, while its aspect of weak uncertainty avoidance could have
an influence on the development of the AE mode. Focusing one’s examination on
cultures with these two kinds of cultural dimensions - especially those which reflect
learning characteristics which are quite opposite in such a great degree as are the AE and
RO dimensions, may aid us in understanding how such cultural complexity is reflected in learning styles. Based on the notion of the co-existence of two separate cultural traits, we can predict that the learning styles particular to Singapore tend to be directed toward the CE mode, and, that they may not be oriented toward an extremely polarized mode in the dimension of AR and RO.

Yuen and Lee (1994) examined 1,032 Singapore undergraduate students with various majors and compared learning styles of Singapore students with those of American undergraduate students in Ruble’s research. Their study depicts that Singapore students develop the AC and the RO modes more than do Ruble’s American subjects. The AE - RO mean score of the Singapore is -0.44 while that of the American students is 2.2. The AC - CE mean score of the Singapore samples is 8.57 while that of the American undergraduates is 6.6. Table 5 shows the LSI data of Yuen and Lee’s research.

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Insert Table 5 about here

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Their result reveals that the Singapore learners are more abstract and reflective than the American students are. With reference to the active and reflective dimension, the Singapore samples almost stay around the center in that dimension with the score of -0.44, which is very close to zero. One possible explanation for this score could be that it reflects a dynamic resolution, or synthesis has taken place. A mean very close to zero is the possible result of the resolution of a strong and equally forceful dialectic confrontation between the two modes of AE and RO. This may thereby be causally instigated by the intensive tension that is created in Singapore possibly through its two
cultural constituents of the interdependent-self and weak uncertainty avoidance. The consequence of such readings for the AE and RO dimensions may thus be interpreted as a manifestation of a unique characteristic wherein two cultural types are complexly intertwined in learning situations. Here, the Singapore samples reflect that the learning dimension between AE and RO is very much linked with culture. The unique interplay between a country's learning styles and its particular culture appears as significantly expressed in Singapore as it did, in its own and different way, in Israel.

However, depending on what cultural parameter a researcher comes predisposed with to apply to his or her particular country of study, one learning mode over another might already be expected and thus 'looked' for or measured, within that particular culture. For example, one could also predict that Singapore learning styles would tend to be more concrete, that is, reflect a preference for the CE mode. This prediction would be completely different from the conclusion drawn by Yuen and Lee that Singapore students greatly prefer the AC mode. Again, as has been the main underlying inquiry of this study, there may be other, several, or more subtle societal or cultural factors that act as environmental determinants upon a culture. And, this thesis applies to Singapore learning styles as well.

Learning styles, as Kolb (1984) explains, are developed in the interplay between internal characteristics and several external conditions; therefore, one or some of these conditions exceedingly affects the Singapore learning styles that are evolved more toward the AC mode. Yuen and Lee point out that the recent Singapore pedagogical system that entails very competitive educational environments for long duration seems to have a great effect on the development of the abstract learning mode of Singapore students. This
incompatibility between the learning characteristic of the interdependent-self related to the CE mode and the targeted, abstract cognitive ability stressed by the Singapore pedagogical system, may quite unusually evolve into an inclination for the AC mode. If so, the AC and CE learning dimension will be more easily affected by an immediate educational environment like the recent Singapore pedagogical system. This will have more effect rather than will external cultural constituents such as the interdependent-self that is related to the CE mode.

**Australian, Hong Kong, and Taiwanese learning styles**

Auyeuang and Sands (1996) examined the relationship between the AE-RO dimension and individual-collective cultures: namely, that of independent-self and, interdependent-self cultures. In their study, the researchers analyzed the sample data from 303 Australian accounting students, whose country is representative of individualism (the independent-self); and 172 students from Hong Kong and 157 Taiwanese accounting students, whose countries are considered Chinese collective (the interdependent-self) culture. The result illustrated that students from Chinese cultures are significantly more reflective and abstract than are the Australian students. The AE - RO mean scores of Hong Kong and Taiwan are -4.35 and -2.66, whereas those of the two Australian universities are 3.66 and 4.03. The AC - CE mean scores of the Hong Kong and Taiwan universities are 4.60 and 4.41, while the scores of two different Australian universities are 2.24 and 2.04. Like Singapore learning styles, Hong Kong and Taiwanese learning styles are described as the Assimilating learning style. Australian students represent the Accommodator style of learning if the LSI mean scores of Auyeuang and Sands’ study are used as a standard for classification of learning styles.
However, the learning style of Australian students can also be categorized as the Converger if the origin of the LSI coordinate axes (i.e., AC - CE = 0 and AE - RO = 0) is applied for such a standard in order to evaluate cross-cultural differences. Table 6 summarizes the LSI results of Auyeung and Sands’ study.

Insert Table 6 about here

Although Auyeung and Sands statistically substantiated their hypothesis that collective culture is more reflective and less active than is individualistic culture, a close examination of the presented data of the AE and RO dimension further reinforces the connection between the independent-self and interdependent-self cultures and the AE and RO dimension. Negative values of the AE - RO mean scores of Hong Kong and Taiwan can be interpreted as those that lie in the area of reflective mode, which is conceptually connected with the learning characteristic of the interdependent-self. Similarly, positive values of those of Australian students suggest that their learning orientation stay in the area of active mode that can be drawn, in theory, from the independent-self. Consequently, those LSI data support the perspective that the learning dimension of AE and RO is related to the cultural dimension of the independent-self vs. interdependent-self.

The result of Auyeung and Sands showed that the Chinese cultural students are more abstract than are the Australian learners. The LSI mean scores, however, may suggest that all students seem to prefer the abstract mode rather than the concrete one; all of their AC - CE mean scores have positive values: 4.60, 4.41, 2.24, and 2.04 respectively, illustrating that these scores stand in the zone of the AC mode. With respect to the
Australian students, their positive values: 2.24 and 2.04 might support the proposition that the independent-self culture is related to the AC mode rather than the CE mode. A comparative investigation between these Australian scores and those of other independent-self countries could help us understand in more depth, the actual range of preferences within Australian learning culture. These two scores of 2.24 and 2.04 are the smallest values reflected by the independent-self countries in my study. The closest value is 4.3, which is regarded as the American normative score presented by Smith and Kolb (1985). It must be taken into consideration that only accounting majors among Australian students were examined. The nature of this sample could in fact lead to suggestions that Australian learning culture is actually more concrete than other independent-self cultures such as the United States and Israel. The relative orientation toward the CE mode within this particular independent-self culture might result from external social or cultural constituents that strongly appreciate and cherish natural environments or human relationships. Countries with an independent-self culture, therefore, may have a wide range in the AC and CE dimension; its learning characteristic of the AC mode seems to tend to be affected by other socio-cultural components that are directly connected to the development of CE mode.

Orientation toward the AC mode expressed by Chinese students may be caused by their choice of educational specialization that has an influence on learning styles. Educational specialization, as Kolb (1984) argues, is one of the external influential factors that strengthen the development of a certain learning mode. As an educational specialization, accounting as a major requires logical, symbolic, and analytical skills that very well may play a crucial role in the development of the AC mode in such students.
This influential pedagogical component, therefore, could intensify the development of AC mode in Chinese students who live within an interdependent-self culture. Such a theory, in overall, suggests that the AC and CE learning dimension in the interdependent-self cultures of Hong Kong and Taiwan, like that of Singapore, tends to be easily affected by an immediate pedagogical environment like the choice of educational specialization that involves the AC mode.

I focused on the examination of each of the interdependent-self and independent-self cultures separately in relation to the AC and CE dimension. However, it is important to further explore an inquiry of the proposition that the interdependent-self culture is more related to the CE mode than the independent-self culture. That the learning styles of Hong Kong and Taiwan, interdependent-self cultures, are more abstract than that of Australian independent-self culture does not necessarily mean that interdependent-self culture is generally more abstract than that of independent-self culture. Australian learning culture, as discussed, appears to be more concrete than does the learning culture of other independent-self countries. In addition, Hong Kong and Taiwanese learning styles in general, may be more concrete than those of other independent-self countries such as the United States and Israel. The two scores of Hong Kong and Taiwanese accounting students: 4.60 and 4.41 are very close to the 4.3 of the LSI normative score of the United States, and smaller than the 5.63 of Israeli samples where demographic characteristics were diversified in light of undergraduate majors. Considering the influence of the educational specialization of accounting majors, we could deduce that the typical learning styles in Hong Kong and Taiwan tend to be more concrete than do those in America and Israel. This view suggests that the interdependent-self cultures of Hong
Kong and Taiwan in general, emphasize more the development of CE mode than do other independent-self cultures. Importantly, this analysis indicates not only that we cannot deny that the interdependent-self culture is related to more concrete than abstract learning modes, but also that country selection, together with demographic characteristics, essentially makes a difference when considering which culture is related to which learning style. It is especially important when considering the relationship between the interdependent-self vs. the independent-self culture and the AC and CE dimension.

Thai learning styles

Thai culture is strongly collectivistic with weak uncertainty avoidance as has been illustrated by Hofstede’s (1997) investigation. The combination of these two cultures, like the one discussed in the section of Singapore learning styles, may induce a dialectic tension between the two learning modes of AE and RO as a consequence. The effect of this combination appears to be reflected in the complexity of Thai learning styles within the AE and RO dimension. The strong collectivistic culture of Thailand may allow us to infer that Thai learning styles tend to be directed toward the CE mode. The following two cross-cultural ELT studies deal with the investigation of Thai learning styles.

Hanpol (1987) investigated the learning styles of 74 Thai undergraduate students of televised distance learning with diversified majors. His study reveals that 44 (59.4%) students expressed a learning preference for the AC mode, 13 (17.5%) for the CE mode, 11(14.8%) for the RO mode, and 6 (8.1%) for the AE mode. Because the learning style distributions of his sample reflect a preference for the abstract to a great degree and for the more reflective, the Thai students may be categorized as the Assimilator overall. Expression of a learning orientation toward the RO mode seems to stem from learning
characteristics derived from the interdependent-self that might be dominating those expected of weak uncertainty avoidance in the AE and RO dimension. As such, the Thai learning styles would in fact be reflected in the learning characteristics of those two cultural conditions.

Their strong preference for the abstract mode shown in the LSI distribution 59.4% of the total students population does not accord with the learning characteristics hypothetically derived from the interdependent-self. The reason for this inconsistency could probably be explained by the socio-environmental characteristics of distance learners who need to, or like to, operate with technological equipment for communication that demands that Thai learners to develop the AC mode. The proximate learning environment that entails developing AC learning skills and abilities may accentuate more strongly the AC mode of students’ learning styles than may the interdependent-self culture. Another study of Thai distance students by Ruksasuk (2000) will show a similar result concerning Thai learning styles.

Ruksasuk (2000) examined the learning styles of 400 Thai distance learners using Web-based communicative networks. Employing the Internet, he randomly collected data from 400 Thai distance students with applied science or technology majors. Of the 400 Thai students, 158 (39.5%) are distributed to the Assimilator, 119 (29.7%) to the Converger, 68 (17.0%) to the Diverger, and 55 (13.7%) to the Accommodator. This learning style distribution indicates that 69.2% of the total subjects, a sum of the Assimilator and the Converger, lie in the AC mode, while 30.8% of the total, a sum of the Diverger and the Accommodator, stay in the CE mode. It also shows that 56.5% of students, a sum of the Assimilator and the Diverger, prefer the RO mode, while 43.5%
students, a sum of the Converger and the Accommodator, are leaned to the AE mode. This tendency that is skewed to the AC and RO modes is congruent with the result of Hanpol. Ruksasuk's study reveals that Web-based distance education with its requirement of computer knowledge and operation may facilitate the abstract capacities of some Thai students. In addition, applied science or technology majors must also be contributors in their development of the abstract mode of learning. Those two components of the Thai distance learners may potentate their predominant orientation toward the AC mode.

The two studies of Thai learning styles suggest that the characteristic of strong interdependent-self culture more than that of weak uncertainty avoidance influence the development of RO mode. They also indicate that the pedagogical environments and educational specialization require the Thai students to develop the AC mode to a great extent. This perspective on Thai learning styles in relation to the effect of culture, as well as the impact of immediate pedagogical factors in the interdependent-self culture, largely agrees with the results found in other Asian cultures such as: Singapore, Hong Kong, and Taiwan, with the exception of Japanese ones. Table 7 shows the two results of Hanpol’s and Ruksasuk’s researches.

Insert Table 7 about here

Papua New Guinea learning styles

The culture of Papua New Guinea may not be known sufficiently and precisely, like that of the aforementioned eight countries. In fact, there is little information about
how its culture is classified into the six cultural typologies. Yet analyses of the LSI data of Papua New Guinea learning styles presented by Sanders (1988) may enable us to infer, or predict, a cultural classification for Papua New Guinea based on the cultural constituents of the six cultural typologies reflected in their learning styles. Moreover, Papua New Guinea learning styles as detected by its LSI data are entirely unique. This makes presenting and discussing the learning styles of this particular country especially worthwhile. It is the only country within my study whose learning styles reflect a pure representation of the Accommodating area where the cross-cultural standard of $AC - CE = 0$ and $AE - RO = 0$ as used here in this study is expressed.

Sanders examined the learning styles of 63 undergraduates in Papua New Guinea by using Kolb's original 9-item LSI. The result of his study shows that the $AC - CE$ mean score of the sample is -2.82, which is equal to -3.76 of the 12-item LSI, and the $AE - RO$ mean score is 3.74, which is equal to 4.99 of that. Accommodating learning style is occupied at the rate of 59% as a major preference of the college students, Diverging learning style is 31%, Converging learning style is 6%, and Assimilator learning style is 4%. This learning style distribution indicates that the subjects feel comfortable when learning through the modes of concrete experience and active experimentation on the whole. In terms of the strong CE orientation, Sanders (1988) explained that the society of Papua New Guinea is likely to value persons over things and ideas, and reinforce the learning skills of personal involvement in learning situations at the expense of symbolic skills. Accordingly, based on the information of the LSI data, its reinterpretation, and Sanders' cultural explanation, we can propose that the culture of Papua New Guinea tends to be characteristic of high context culture, the culture of shame, O-type
organizations, weak uncertainty avoidance, and field dependent. Cross-cultural
examination of this proposition is the future implementation of this study. Table 8
describes the LSI result of Sanders’ study.

Insert Table 8 about here

American Indian learning styles

Hall (1976) states that American Indian society is a high context culture; therefore,
those with this culture are likely to express their preference for the mode of concrete
experience. In this culture, the LSI distribution of the four learning styles is probably
dominantly occupied by the Diverging and/or the Accommodating learning styles, while
the Converging and/or the Assimilating learning styles are less likely to prevail in that
distribution.

The empirical study of Rhodes (1990) about the learning style of American Indian
students and teachers describes a cultural contrast to Western industrial society. Forty
percent of 101 Navajo high school students and 54 % of 98 Hopi high school students
preferred the Diverging learning style while the Converger was the least learning
preference of both student groups and represented less than 8 % of the total. Forty three
percent of 80 Navajo teachers equally preferred the Diverging and the Assimilating
learning style and 40 % of 25 Hopi teachers preferred the Diverging learning style. Hopi
and Navajo teachers showed the Converging learning style as the least preferred learning
styles. The result illustrates that the community comprised by the American Indian
school culturally differs from that of Western industrial society. Since American Indian
society is also a high context culture, this finding of Rhodes' accords with the perspective that high-context culture is associated with the CE mode. The LSI distribution of the learning styles of American Indian subjects mostly sustains this. Table 9 shows the result of LSI scores of Rhodes' study.

Insert Table 9 about here

The examination and discussion of the previous cross-cultural empirical ELT studies may make it possible to map cross-cultural learning styles on a LSI grid whose original point lies in $AC - CE = 0$ and $AE - RO = 0$. Although the following cross-cultural LSI map includes rough estimation of some LSI scores and holds different demographic characteristics of the research samples, it may be worthwhile seeing overall cross-cultural differences in learning styles. Figure 2 is depicted as cross-cultural differences in learning styles based on the empirical ELT researches about the nine countries and one society.

Insert Figure 2 about here

Conclusion

Enabled by Kolb's insights into learning styles, I examined the pedagogical imperatives and potentials which can be drawn from all the aforementioned cultural investigators and which I explored in depth in my study. In order to know exactly which culture is related to which style, or mode of learning; I first conducted a theoretical
examination, aiming my attention at the conceptual similarities between their six cultural
typologies and Kolb’s ELT. This work connected the differences among such cultural
dimensions with the four learning modes reflected within ELT learning styles.

Secondly, I reanalyzed the LSI data of the cross-cultural ELT research in the past, so that my reinterpretation of these data would help us recognize that culture definitely involves the development of learning styles. This examination might throw a light on perspectives of not only which culture is related to which learning mode or style, but also which environmental factors may more easily affect a particular learning mode or dimension by cultures. More specifically, most of the LSI data of the countries discussed in my study seem to suggest that the AE and RO learning dimension tend to be reflected more in the cultural characteristics investigated throughout my study; and thus might have a tendency to be less influenced by those pedagogical components, to the extent that such components are not purposely designed to develop each of the two modes in that dimension. In contrast, the AC and CE learning dimension may tend to be more easily affected by the discussed pedagogical components that are strongly linked to the development for specialization of the AC mode in particular. Examples of this manifestation in this study are the four Asian countries: Singapore, Hong Kong, Taiwan, and Thailand. Wide empirical testing of these hypotheses is the future hope of this work.

According to Kolb (1984; Kolb, Boyatzis, and Mainemelis, 2001), interplay between people and the world shapes learning styles at five levels: psychological types, educational specialization, professional career, current job, and adaptive competencies. The consequence of this study may be to indicate that the culture of the country around a people may be the sixth level of interplay between them and the world in a positive way.
This suggestion is meant to emphasize that the culture of country must necessarily be considered as a crucial factor so that we can understand individual learning styles with integration, especially when they are examined in a country categorized as at least one of the six cultural typologies. Individual learning styles in a country such as Singapore, Hong Kong, Taiwan, or Thailand as discussed in this study, may be presented and developed as a result of the resolution of a tension between a component of the five levels and its culture. Close examination between the cultural component and the other five levels of factors will give us valuable insight into how individual learning styles are shaped and developed in a particular culture.

Finally, Kolb's and the unique insights and theories of other researchers mentioned, pointed the way to my own fundamental revelations about how the culture of learning might be practically applied to various countries and cultures worldwide. Quite obviously, however, the number of cross-cultural ELT studies discussed in my study is not sufficient to fully understand the relationship between cultural differences and ELT learning styles. Needless to say, more cross-cultural empirical ELT studies are desirable and necessary to profoundly understand the relationship between them. This perspective will offer opportunities for future research in which ELT learning styles can be examined in a multinational corporation or a global non-profit organization such as the United Nations that operates across different cultures over the world, as it would provide a large sample of relatively common demographic characteristics. Such empirical examination would not only help us learn the relationship between ELT learning styles and cultural differences in a more comprehensive manner, but also help us know the culture of learning the world over.
References


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TABLE I

Conceptual Relationships Between Four Learning Modes and Six Cultural Typologies

<table>
<thead>
<tr>
<th>Four learning modes of Kolb's ELT</th>
<th>Concrete Experience (CE)</th>
<th>Abstract Conceptualization (AC)</th>
<th>Reflective Observation (RO)</th>
<th>Active Experimentation (AE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hall</td>
<td>High context culture</td>
<td>Low context culture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benedict</td>
<td>Shame culture</td>
<td>Guilt culture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hofstede</td>
<td></td>
<td></td>
<td>Strong Uncertainty avoidance</td>
<td>Weak Uncertainty avoidance</td>
</tr>
<tr>
<td>Hayashi</td>
<td>O-type organization</td>
<td>M-type organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Markus &amp; Kitayama</td>
<td>Interdependent-self (Collectivism)</td>
<td>Independent-self (Individualism)</td>
<td>Interdependent-self (Collectivism)</td>
<td>Independent-self (Individualism)</td>
</tr>
<tr>
<td>Witkin</td>
<td>Field-dependent</td>
<td>Field-independent</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**TABLE 2**

Japanese learning styles of McMurray's study (N = 160)

<table>
<thead>
<tr>
<th></th>
<th>CE mode</th>
<th>RO mode</th>
<th>AC mode</th>
<th>AE mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st survey at spring 1997</td>
<td>39%</td>
<td>36%</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>2nd survey at fall 1997</td>
<td>40%</td>
<td>36%</td>
<td>17%</td>
<td>7%</td>
</tr>
</tbody>
</table>

(1998)
Undergraduates with economics or science majors
TABLE 3
American learning styles by five studies

<table>
<thead>
<tr>
<th></th>
<th>CE mode</th>
<th>RO mode</th>
<th>AC mode</th>
<th>AE mode</th>
<th>AC - CE</th>
<th>AE - RO</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Adults (N=1446)</td>
<td>26.0</td>
<td>29.9</td>
<td>30.3</td>
<td>35.4</td>
<td>4.3</td>
<td>5.9</td>
</tr>
<tr>
<td>Smith &amp; Kolb (1985)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduates (N=312)</td>
<td>23.7</td>
<td>31.9</td>
<td>30.3</td>
<td>34.1</td>
<td>6.6</td>
<td>2.2</td>
</tr>
<tr>
<td>Ruble (1990)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managers (N=480)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Kolb &amp; Fry (1975)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(6.0)*</td>
<td>(3.9)</td>
</tr>
<tr>
<td>Undergraduates (N=40)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>22.65</td>
<td>32.80</td>
<td>31.60</td>
<td>34.35</td>
<td>8.95</td>
<td>1.55</td>
</tr>
<tr>
<td>Geiger &amp; Pint (1991)</td>
<td>19.98</td>
<td>33.43</td>
<td>32.25</td>
<td>34.65</td>
<td>12.28</td>
<td>1.23</td>
</tr>
<tr>
<td>2nd Business majors</td>
<td>20.70</td>
<td>32.55</td>
<td>31.45</td>
<td>35.30</td>
<td>10.75</td>
<td>2.75</td>
</tr>
<tr>
<td>MBA Full time (N=607)</td>
<td>25.41</td>
<td>28.45</td>
<td>32.89</td>
<td>33.26</td>
<td>7.48</td>
<td>4.82</td>
</tr>
<tr>
<td>Boyatzis &amp; Mainemelis (2001)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBA Part time (N=679)</td>
<td>23.68</td>
<td>27.38</td>
<td>34.69</td>
<td>34.25</td>
<td>11.01</td>
<td>6.87</td>
</tr>
<tr>
<td>Boyatzis &amp; Mainemelis (2001)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: for comparison of other LSI scores, the number of parenthesis is calculated as the same value of 12-item LSI.
### TABLE 4

Israeli learning styles by Katz's study (N = 821)

<table>
<thead>
<tr>
<th></th>
<th>AC - CE</th>
<th>AE - RO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduates &amp; social workers</td>
<td>4.22</td>
<td>4.27</td>
</tr>
<tr>
<td></td>
<td>(5.63)*</td>
<td>(5.69)</td>
</tr>
</tbody>
</table>

(1988)
Various undergraduates' majors
*Note: for comparison of other LSI scores, the number of parenthesis is calculated as the same value of 12-ites LSI.

### TABLE 5

Singapore learning styles by Yuen & Lee's study (N = 1032)

<table>
<thead>
<tr>
<th></th>
<th>CE mode</th>
<th>RO mode</th>
<th>AC mode</th>
<th>AE mode</th>
<th>AC - CE</th>
<th>AE - RO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduates</td>
<td>26.0</td>
<td>29.2</td>
<td>34.6</td>
<td>29.5</td>
<td>8.57</td>
<td>-0.44</td>
</tr>
</tbody>
</table>

(1994)
Various majors
<table>
<thead>
<tr>
<th>Region</th>
<th>CE mode</th>
<th>RO mode</th>
<th>AC mode</th>
<th>AE mode</th>
<th>AC - CE</th>
<th>AE - RO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One group (N=125)</td>
<td>14.42</td>
<td>13.65</td>
<td>16.66</td>
<td>17.30</td>
<td>2.24</td>
<td>3.66</td>
</tr>
<tr>
<td>The other group (N=172)</td>
<td>14.54</td>
<td>13.56</td>
<td>16.58</td>
<td>17.58</td>
<td>2.04</td>
<td>4.03</td>
</tr>
<tr>
<td>Hong Kong (N=172)</td>
<td>12.95</td>
<td>17.26</td>
<td>17.55</td>
<td>12.90</td>
<td>4.60</td>
<td>-4.35</td>
</tr>
<tr>
<td>Taiwan (N=157)</td>
<td>13.71</td>
<td>15.98</td>
<td>18.12</td>
<td>13.32</td>
<td>4.41</td>
<td>-2.66</td>
</tr>
</tbody>
</table>

(1996)
All samples are undergraduates of accounting major
### TABLE 7

Thai learning styles by Hanpol's study and Rukusasuk' study

<table>
<thead>
<tr>
<th></th>
<th>CE mode</th>
<th>RO mode</th>
<th>AC mode</th>
<th>AE mode</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distance learners (N=74)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hanpol (1988)</td>
<td>13 (17.5%)</td>
<td>11 (14.8%)</td>
<td>44 (59.4%)</td>
<td>6 (8.1%)</td>
</tr>
<tr>
<td>Various majors of undergraduates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Diverger</th>
<th>Assimilator</th>
<th>Converger</th>
<th>Accommodator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distance learners (N=400)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rukusasuk (2000)</td>
<td>68 (17.0%)</td>
<td>158 (39.5%)</td>
<td>119 (29.7%)</td>
<td>55 (13.7%)</td>
</tr>
<tr>
<td>Applied science &amp; technology majors of undergraduates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 8

Papua New Guinea learning styles by Sanders' study (N = 63)

<table>
<thead>
<tr>
<th></th>
<th>Diverger</th>
<th>Assimilator</th>
<th>Converger</th>
<th>Accommodator</th>
<th>AC - CE</th>
<th>AE - RO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Undergraduates</strong></td>
<td>31%</td>
<td>4%</td>
<td>6%</td>
<td>59%</td>
<td>-2.82</td>
<td>3.74</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(-3.76)*</td>
<td>(4.99)</td>
</tr>
</tbody>
</table>

*(1988)*

*Note: for comparison of other LSI scores, the number of parenthesis is calculated as the same value of 12-ites LSI. Christian religious training college*
<table>
<thead>
<tr>
<th></th>
<th>Diverger</th>
<th>Assimilator</th>
<th>Converger</th>
<th>Accommodator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navajo students (N=101)</td>
<td>40%</td>
<td>25%</td>
<td>6%</td>
<td>29%</td>
</tr>
<tr>
<td>Hopi students (N=98)</td>
<td>54%</td>
<td>24%</td>
<td>8%</td>
<td>13%</td>
</tr>
<tr>
<td>Navajo teachers (N=80)</td>
<td>43%</td>
<td>43%</td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>Hopi teachers (N=25)</td>
<td>40%</td>
<td>24%</td>
<td>16%</td>
<td>20%</td>
</tr>
</tbody>
</table>

(1990)
High school students and teachers
Figure 1: Kolb's experiential learning model.
FIGURE 2

Six cultural typologies and cross-cultural learning styles

<table>
<thead>
<tr>
<th>Concrete Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodator</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Diverger</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Active Experimentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodator</td>
</tr>
<tr>
<td>Diverger</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reflective Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodator</td>
</tr>
<tr>
<td>Diverger</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Note: (1) The origin of the coordinate axes represents AC-CE=0 and AE-RO=0.
(2) LSI scores of AC-CE and AE-RO of Japan, Thai, and American Indians are roughly estimated based on the presented original data.