THE DYNAMICS AMONG NON-ENGLISH SPEAKING ONLINE LEARNERS’ LANGUAGE PROFICIENCY, COPING MECHANISMS, AND CULTURAL INTELLIGENCE: IMPLICATIONS FOR EFFECTIVE PRACTICE FOR ONLINE CROSS-CULTURAL COLLABORATION

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Cross-cultural online collaboration has evolved as an inevitable trend that people influenced by globalization cannot neglect. The primary purpose of this study was to discover major factors contributing to productive and effective online cross-cultural collaborative learning for people from diverse cultural backgrounds with varying levels of English language proficiency. Because of the preliminary nature of this study, ground theory (GT) methodology and data analysis were implemented. Participants included 23 American and 17 Taiwanese graduate students majoring in educational psychology. Divided into several problem-based learning (PBL) groups, they strived to collaborate solely online to finish two problem-based tasks on an online learning platform.

Several major themes emerged. First, Taiwanese students’ persistent apprehension about English proficiency became the major barrier to their online collaborative learning. Second, their language apprehension evolved as problem focused and task oriented; to reach their goal, however, maintaining mental perseverance was vital. Third, exercising problem-focused coping strategies accompanied by proper cultural intelligence not only facilitated their online learning performance but also accelerated the acculturation process. Fourth, American peers’ encouragement and
support in language and cultural knowledge played a key role in facilitating the overall success of the online cross-cultural collaboration. Finally, to verify the themes above, further empirical studies are necessary.
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As a Buddhist psychology researcher and practitioner, I would like prostrate to Buddha, Cundhi Bodhisattva, Dharma and Sangha. With compassion and diligence, I promise I will continue the righteous and intelligent path to the enlightenment.
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CHAPTER I: INTRODUCTION

Current economic and political realities have made globalization—the increasingly mutual interdependence among nations and cultures—an imperative and inevitable trend. At the time of this writing, no single nation or political entity could intentionally isolate itself from world and survive (Cushner, McCelland, & Safford, 2003). Once an aspiring researcher in biology at the Institute Pasteur and now a renowned psychologist and Buddhist monk, Matthieu Ricard (2007) with a group of leading scientists and psychologists at the Mind and Life Conference asserted that features of interdependence constitute the innate and intrinsic psychological nature of human beings. The interconnectedness of diversity and variety ensures not only the survival of human beings but also their ability to thrive. Consequently, all human beings share the responsibility to make the earth an interconnected global village and a better place to live (Cushner et al., 2003; Dalai Lama & Chen, 2004). The second decade of the 21st century began as an era when unprecedented numbers of people of multiple nationalities and cultures with diverse cultural and language backgrounds were more likely to encounter and interact with one other collaboratively.

No matter how sublime it sounds, however, globalization is the product of people’s collective efforts, achieved only by people of Cross-cultural backgrounds genuinely interacting and collaborating with one another and putting their ideas into action. Fortunately, few professionals have excluded themselves from this promising trend of cross-cultural collaboration (Quezada & Louque, 2004). In addition, because of the rapid development of information technology (IT) and course management systems
(CMSs), cross-cultural collaboration can take place online. The U.S. National Center for Education Statistics has estimated that students in 37% of school districts in the US enrolled in technology-supported distance education courses during the 2004–05 school year (Zandberg & Lewis, 2008). Such courses included two-way interactive video as well as Internet-based activities and involved an estimated 506,950 people, a 60% increase over the estimate based on the 2002–03 survey (Setzer & Lewis, 2007). Two district surveys commissioned by the Sloan Consortium (Picciano & Seaman, 2007, 2009) produced estimates that in the US, 700,000 K–12 public school students took online courses in 2005–06; and over a million students did so in 2007–08, a 43% percent increase.

Since 1997, online courses have become one of the most influential curriculum-delivery media in the United States (Rovai, 2004). Allen and Seaman (2009) stated that over 4.6 million students took at least one online course during the fall 2008 term, a 17% increase over the number reported the previous year, a growth rate far exceeding the 1.2% growth of the overall higher education student population. Thus, more than one in four higher education students took at least one course online at the time of this writing. By 2031 in the United States, the global market for online learning will exceed $215 billion, over 90% of college students will have access to the Internet, and over 75% of them will access the Internet daily. Online learning in higher education in the US will exceed an estimated $69 billion by 2015, making distance learning the fastest growing subsector of a $2.3 trillion global education market (Hezel & Mitchell, 2011).
The flourishing of online learning in the US benefits more than American domestic users: Demographic data reveal that a substantial part of the online learning audience of U.S. higher education institutions included ESL/EFL international students. In spite of a slight decline in 2009–10, according to the Open Door database, 690,923 international students enrolled in U.S. higher education institutions (“International Students in the US,” 2010). Among them, 57% of the international students were graduate students from non-English speaking East Asian and Middle Eastern countries. According to this database, in 2009–10, approximately 26,685 Taiwanese students came to the United States to pursue an advanced degree at American universities. International students from China (127,628), Korea (72,153), Japan (24,842) and several Middle Eastern countries constituted approximately 60% of the international student population in U.S. higher education institutions, and international students contributed approximately $12 billion to the U.S. economy (“International Students in the US,” 2010).

Given the geographical divisions and the rapid development of information technology (IT), the most pervasive learning platform for delivering online Cross-cultural collaborative learning is through computer-mediated communication (CMC) and course manage systems (CMSs). Thus, online cross-cultural collaboration and learning become possible and feasible. Online researchers have indicated that widespread information technology could be used as a powerful and promising cognitive tool to compensate for the culture and language gap among Cross-cultural groups (O’Dowd & Eberbach, 2004).

Online learning not only breaks the confines of geographical separation but also
provides learners with alternatives, flexibility, and learning autonomy; as a result, it has
drawn the attention and effort of researchers from various disciplines (Jamieson, 2004;
Ligorio & Veermans, 2005). Most researchers hold a relatively optimistic view of the
potential impact of online learning on all aspects of education in the future, including
assessment, preparation and presentation of teaching materials, instructional design,
teachers’ preparatory education, and classroom arrangements (Funaro & Montell, 1999;
Gillespie, 1998; Harasim, 1991; Kim, 2001; Koschmann, Hall, & Miyake, 2002). They
also believe that online learning may open up a revolutionary and nontraditional set of
teaching and learning channels as well as opportunities for both domestic and
international learners and instructors (Gillespie, 1998; Gold, 2001; Poirier & Feldman,
2004). For instance, Poirier and Feldman (2004) indicated that while taking conventional
multiple-choice tests, students in online courses with proper instructor guidance and
intervention significantly outperformed (i.e., answered more questions right) students
who take conventional face-to-face courses. Overall, researchers have also found that
students taking online courses are satisfied with the interactive aspect and the supportive
nature of online learning (Lapadat, 2002; Means, Toyama, Murphy, Bakia, & Jones,
2010)

Because a large number of online learning participants are from non-English
speaking countries, predictably, they may need to use English as a commonly shared
communication tool to collaborate with one another online. Scholars in the fields of
English as a Second Language (ESL), English as a Foreign language (EFL), and second
language acquisition (SLA) agreed that current online learning interfaces, such as course
management systems (CMSs) or various computer-mediated communication (CMC) tools, offer ESL instructors new pedagogical opportunities for enhancing ESL/EFL learners’ mastery of the target language (English) through the process of constantly exercising their psycholinguistic capabilities. For instance, ESL researchers like Ishida (2006) discovered that while engaging in collaborative learning, especially with group members who are native speakers of English, those participants lacking English proficiency actually benefit most from the process; and they gain confidence and self-efficacy resulting from gradually achieving a command of English. According to Freeman (1992) and Kohonen (1992), appropriate collaborative instructional strategies in the ESL classroom can enhance participants’ mutual understanding, especially when participants have diverse language backgrounds. Tsai (2004) indicated that by implementing collaborative learning, Taiwanese senior high school students’ English reading comprehension and their self-regulated learning performance significantly improved. In addition, students’ social interaction (i.e., negotiation) and intercultural competence in English were also enhanced; they showed more interest in learning and understanding cultures and lifestyles in the United States.

In terms of language learning, implementing online collaboration via CMC could be as effective as its taking place in the traditional education setting. For instance, Choi (2008) stated that implementing online collaborative learning strategies, such as arranging group work on online discussion boards, can promote ESL learners’ writing skills to some degree. In addition, various studies showed that compared to collaborative learning taking place in the traditional face-to-face classroom, online collaborative
learning may provide ESL students more time for reflection, which in turn refines their written as well as oral English production, making their presentation in English more comprehensible. Once receiving positive feedback, both their English proficiency and self-efficacy are enhanced as well (Blake, 2000; Kern, 1995; Warschauer, 1997). Ishida (2006) discussed how productive and effective online intercultural collaboration could be for ESL learners. She pointed out that while assisted by a well-designed online language learning grid, such as a discussion board section assisted by language learning tools exclusively set for participants encountering language challenges, nonnative speakers of English made tremendous progress in English language proficiency. Besides, their level of satisfaction and self-efficacy in terms of English learning also improved. To sum up, provided by appropriate online cognitive tools and online learning platforms, second language learners’ language proficiency, perspective-taking, meaning-negotiation skills, and metalinguistic awareness can all be promoted and enhanced (Blake, 2000; Hyun, 2005; Kern, Ware, & Warschauer, 2004; Kim, 2001, Marina, 2004; Norton, 2000; Schmidt, 1990; Van Lier, 2000; Ware, 2004).

**Challenges Emerge**

**Language-Related Issues**

In view of the studies noted above, online learning is, no doubt, promising; however, a close look at their findings also implicitly reveals looming issues that remain unaddressed and unattended.

First, according to the Global Education report, by 2015, one of every five prospective online learners in the U.S. will be international students (Hezel & Mitchell,
Based on Internet World Statistics (2011), people from China (21.5%), Japan
(5.0%), India (4.1%), Brazil (3.9%) and Germany (3.3%) constitute over 37% of Internet
users, far exceeding users from the United States (12%). These statistics imply that a
large number of online users are neither Americans nor people from English-speaking
countries but instead people with non-English language backgrounds, such as some
Asians and Latin Americans; furthermore, based on the Open Door database, most
international students coming to the US for advanced degrees are actually from Pan
Asian, Middle Eastern or non-English speaking countries. For instance, international
students coming from China, Korea, Taiwan, and Japan, who are apparently not native
speakers of English, constitute nearly 20% of the international student population
(International Students in the US, 2011).

Because of the dominating rate of English language penetration, which is defined
as the ratio of the sum of Internet users speaking a language and the total population
estimated to speak that specific language, the major language in virtual environments and
cyberspace is English, which has been adopted by 42.6% of Internet users. The next
three largest language usage groups are Chinese, 32.6%; Spanish, 36.5% and Japanese;
5.0% (Internet World Stats, 2011). Whether in the traditional face-to-face classroom or
an online virtual environment, English, with the strongest power of Internet language
usage penetration, serves as the major communication tool pervasively adopted by all
Internet users for interaction and communication (Internet World Stats, 2011).
Furthermore, most online-learning platforms have been designed in English language and
are aimed at English users (Maceviciute, 2006).
If English is the dominating language online, it has surely had impact upon prospective online learning users. A consensus among cognitive psychologists and psycholinguistics has gradually emerged in the form of linguistic relativity theory. These theorists have argued that the structure and lexicon of one’s language influences how one perceives and conceptualizes or makes sense of the world in systematic ways. In other words, the particular language people speak contributes to the way they shape, organize, interpret, and frame reality (Alloway & Corley, 2004; Ding & Boody, 2000; “Relativism,” 2003). The brain, biologically and innately designed to interact with outer world, continuously shapes and is shaped by the language one uses (Christiansen & Chater, 2008).

As a result, language is not a universal, purely objective, and context-free entity; instead, language is culture-imbued and context-sensitive. According to this line of reasoning, because group members who are nonnative speakers of English must communicate online in English, various challenges related to language issues may emerge. For instance, O’Dowd & Eberbach (2004) argued that in the online learning setting, certain learners may have a wealth of knowledge in their own language and culture; however, because of a lack of proficiency in the target language, both the verbal and the nonverbal, they may be unable to deliver this knowledge to other online learners effectively and may even misinterpret their partners’ behaviors. The result is that isolation and mistrust occur among group members.

Impact of Information Technology

An implicit interconnection exists between language and technology. Contrary to
common belief, technology is not a value-free entity. Instead, it is the reflection or production of some value projected by a group of people and fostered by certain cultural mentalities or contexts (Browers, 1988; Hudson, 2003). Technology is, therefore, capable of imposing tremendous influence on its users, qualitatively as well as quantitatively transforming users’ language usage; consequently, users’ original communication styles, cognitive preferences, meaning interpretations and underlying value systems are in turn transformed. In the online Cross-cultural collaborative learning setting, while collaboration and interaction among group members heavily rely on computer-mediated communication, the impact information technology may have on language becomes even more significant and evident (Jin, 2004).

According to Newman, Griffin, and Cole (1989), information technology itself is not only the representative of a specific cultural system, but it is also a cultural amplifier or cognitive tool. Arguably, current information technology may be regarded as the representative of the American culture and value system. For instance, it emphasizes enhancing learners’ online learning efficacy and effectiveness, equal access to the Internet, linear-order thinking and interface design, left-to-right writing layouts, and dialectic-oriented communication styles, just name a few (Carr-Chellman, 2000; Hudson, 2003). For instance, in my earlier research (Ou, 2005), I argued that because of the popularity of Web-designing tools and word processing software such as the Dreamweaver and Microsoft Word, which are primarily designed by the United States, the left-to-right writing layout has tremendous impact on senior high students’ cognition preferences in Taiwan. Gradually, senior high school students in Taiwan are shifting their
cognitive preferences from the traditional Chinese top-to-bottom writing layout into the Westernized left-to-right layout. In my study, I indicated that Taiwanese senior high school students perform much better in their reading comprehension tests when they are reading Chinese-written articles arranged in the left-to-right layout, which is traditionally unrecognizable to people using Mandarin Chinese (Ou, 2005).

One may imagine what non-English-speaking online learning users may encounter during the process of online learning. On one hand, they operate under the influence of their own language preference and cognitive habituation; on the other hand, they may have no better options but to adopt English, a language foreign to them, as the major communication and even as a survival tool to function and communicate online with their peers. In addition, they may need substantial amounts of time to familiarize themselves with various online learning platforms, which are arguably the manifestation of certain cognitive preferences and originally designed for English-speaking users. Given this condition, something unpredictable may take place, and these non-English speaking learners are bound to encounter language-related challenges during the process of their online collaborative learning.

**Habituated Preference**

Second, most international students in the US are generally adult graduate students over the age of 18 (International Students in the US, 2011). Compared to traditional domestic learners in U.S. higher education institutions, who are younger undergraduate students under 18, international students are adults who may take advantage of their strong intrinsic motivation, cognitive maturation, profound prior
knowledge, and learning readiness (Chaffin & Harlow, 2005; Hung, 2002). To some degree they may have confined themselves already to certain types of habituated cognitive preferences, preconceived assumptions, ideologies, philosophies, and biases toward specific ontological, epistemological, and pedagogical views of learning (Ou, 2005). In addition, most nonnative English-speaking international graduate students come from countries with non-Western educational systems (Internet World Stats, 2011). As a result, before coming to the US, they may have been nurtured and immersed in their own particular cultural and historical contexts for a long period of time, growing accustomed to certain types of cognitive styles and particular ways of conducting problem-solving strategies.

When nonnative English-speaking adult international students need to collaborate with American peers online, current information technology may facilitate their assimilation into a group some degree. Gill (1996) indicated that ideally, information technology should be integrated into the society to meet people’s needs in the particular social–cultural setting, promoting local knowledge and increasing situated cognition instead of imposing a preprogrammed and uniform entity of knowledge. It should serve as the multicultural-friendly platform or interface on which various communication and idea exchanges could be encouraged and facilitated; however, to achieve this promising ideal of online Cross-cultural collaborative learning, participants’ fixated and habituated culturally dependent behaviors must be considered and addressed. This goal, however, is not easy to fulfill. For instance, Sternberg (1997), based on the results gathered from the thinking- style inventory, argued that one’s thinking style is a psychometrically stable
characteristic that does not vary too much even if exercised in various cross-cultural settings. According to McLoughlin and Oliver (1999), pedagogical values generally emphasized in one culture may not be suitable to another; as a result, learners may become confused and question the value of knowledge in the host society. This problem reflects the fact that a sizable minority of international students with non-English speaking backgrounds feel less satisfied with distance education and online learning (Rovai, 2004). In some cases, instead of fully embracing the advantages and potentials of online collaborative learning, international students may perceive online learning as an unfamiliar threat to their previous ontological, epistemological, and pedagogical philosophies and assumptions and interpreted and perceived as an obstacle instead of an advantage (Wang & Newlin, 2002). Although Walker and Jeurissen (2003) optimistically indicated that to compensate for the gap among cultures, languages, and people, online learning information technology may be the most promising tool, they also admitted that everyone involved in it still has plenty of issues to handle. Time management, technology skills, platform design, and participants’ psychological readjustment, including the ability to implement appropriate coping strategies, are issues that deserve further consideration. K.S. Kim (2001) indicated that one’s learning preference, such as a preference for field dependent or field independent learning, also strongly impacted one’s information-seeking process.

Thus, when users from non-American backgrounds must collaborate with American peers in a traditional or online setting, how they readjust their mentality to cope with emerging challenges and difficulties becomes crucial. Unfortunately, various
language-related issues are rarely addressed in the current literature. For example, among nonnative and native speakers of English, the differences or implications in their online communication patterns, their culturally specific cognitive or learning styles in the online multinational, Cross-cultural collaborative setting, and what strategies should be considered or adopted to assist them in surviving as well as thriving during the process of online multinational, Cross-cultural collaborative learning, just to name a few topics, may need to be studied further.

**Challenges of Collaboration**

Third, Harrison (2000) cited three trends emerging in our current information-oriented society; they are globalization, increasing opportunities for collaboration for diverse people in diverse workplaces, and the wide use of information technology. Developing opportunities may no longer be a luxury but an imminent need; thus, he advocated (a) building an environment suitable for cross-cultural collaboration, in which people may manage to recognize culture knowledge, and (b) making the online learning environment a collaboration-friendly context for people coming from diverse cultural backgrounds.

All this, however, is easier said than done. Regardless of whether it takes place in the traditional education setting or online learning environment, collaboration, is not an easy and carefree-task for participants and instructors; but it is promising. K. Smith and Berg (1997) even made the point that group work may be inherently contradictory to the nature of human beings and burden-loaded; yet if it is properly executed and carefully attended to, collaboration may not be such a threatening task. Ensuring the quality of
collaboration requires effective skills, not only knowledge and executive techniques but also mental resiliency and vision (Gerald & Coleman, 2011). When engaging in online cross-cultural collaboration in which participants may reside in different locations, come from diverse cultural traditions, and speak a variety of languages, tasks may become more complex. Specifically, the essence of collaboration requires examination, particularly in the context of online Cross-cultural collaborative learning. In addition, the perspective from which the theoretical foundations of online cross-cultural collaboration are to be viewed must be established. The researcher argues below that resolving these issues is essential because participants from diverse cultural backgrounds introduce more global perspectives on interpretation systems, which may be helpful in supporting current studies on collaboration.

**Cultural Issues**

Fourth, because the online learning platform provides unprecedented opportunities for people from multiple cultures to meet and interact, the genuine meaning of “when East meets West” may surface. Constructs, such as culture, multi-culture, and cross-culture involve complicated and multilayered meanings based on different contexts (Locke, 2005; R. W. Smith, 2000). Simply put, culture could be viewed as a construct with multiple-layered meanings, particular patterns of thinking, feeling, and potential acting, the mental program a group of people adopt to make sense of reality (Hofstede, Hofstede, & Minkov, 2010). Culture is also a commonly shared system of general beliefs, values, and underlying assumptions held by a group of people as well (“Cross-Cultural Issues,” 2002); therefore, culture is learned and nurtured instead of inherited
Culture implicitly or explicitly affects who people are, how they think, and how they respond to the environment while employing different mentalities and strategies. In terms of learning, similar to language, culture affects how people learn, why they learn in certain ways, how they assess the outcome of their learning, and how they feel about their learning (Hofstede, Hofstede, & Minkov, 2010; Tu, 2001).

When people from multiple never-the-twain-shall-meet cultures meet and interact with one another in the online setting, according to cross-cultural psychologists, the process of acculturation occurs. Sodowsky and Plake (1992) indicated that acculturation is one’s psychological adjusting process to cope with culture-related difficulties. When members from different cultures interact with one another, novel situations as well as the unfamiliar people they encounter require the exercise of certain coping mechanisms to balance psychological trade-offs. Namely, they decide, or are sometimes forced to decide, how they will connect to the host culture. They may accept some useful cultural entities but discard other value systems, cultural practices, and even language; or they may choose to immerse themselves totally in the host society, entirely discarding their own cultural heritage. No matter what they do, they continuously need to exercise cognition appraisal skills on culture, or culture knowledge, to assess then decide what appropriate strategies they may adopt to ensure that the process of acculturation is a nonthreatening and even successful experience. In recent years, cross-cultural psychologists proposed a new construct in culture knowledge, cultural intelligence (Ang & Van Dyne, 2008). They argued that the not only know-what but know-how part, or the
underlying mechanism of putting one’s cultural knowledge into action, is the manifestation of one’s cultural intelligence. They also argued that one’s cultural intelligence plays an important role in determining how one may employ what kind of strategies during the process of acculturation, which in turns, ensures the quality of cross-cultural collaboration (Ang & Van Dyne, 2008).

Until the time of this writing, the probable connection among online cross-cultural collaboration, acculturation, and cultural intelligence were not yet explored and established. For instance, while collaborating with other culture groups, certain culture groups tend to adopt coping strategies in order to acculturate themselves into the online collaborative learning setting. Why they tend to adopt some acculturation strategies over others is of interest as are the consequences they may suffer if they cannot exercise their cultural intelligence to cope with the challenges well.

**Coping: Opportunities**

Because language, culture, information technology and online Cross-cultural collaborative learning are interwoven and interconnected (McLoughlin, 1999), one can infer that students from culturally diverse backgrounds, while taking online courses and collaborating, may experience challenges; and these may hamper their social as well as cognitive functions as effective learners, jeopardizing their academic performance and social connections (Chase, Macfadyen, Reeder, & Roche, 2002).

Whatever challenges participants from Cross-cultural backgrounds may encounter, fundamentally, they need one psychological trait to survive, even thrive—mental resiliency to cope with challenges, to persist and persevere through the entire
process of online cross-cultural collaboration. According to Folkman and Lazarus coping is a process in which “one constantly changes cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing” (as cited in Cummings, Greene, & Karraker, 1991, p. 92). In recent decades, the coping mechanism and its probable theoretical connections with various personality traits and psychological theories, such as gender differences, culture, acculturation, attribution theories, learned helplessness, positive psychology, just to name a few, have been explored by many researchers (Lazarus, 1991; Lazarus & Folkman, 1984; Rinpoche, 2010; Washburn-Ormachea, Hillman, & Sawilowsky, 2004). Surely, some coping strategies are deemed by psychologists as maladaptive or psychologically unsounded, and some, positive and favorable to psychological wellness. Psychologists primarily sort coping strategies into two categories: problem-focused and emotion-focused, considering the former beneficial to psychological well-being and the latter, maladaptive and harmful to problem-solving (Weiten, & Lloyd, 2008).

Whether or not certain coping strategies, so-called “maladaptive” strategies, for instance, are applicable to participants from Cross-cultural backgrounds is an issue; so is whether in-depth interpretations, especially putting participants’ particular cultural contexts into consideration, yield a more comprehensive understanding of the coping mechanism. What online Cross-cultural collaborative learning provides is an unprecedented opportunity or a crisis of learning somewhat dependent on how effectively participants involved in it could cope with emerging challenges and keep themselves engaged, persistently striving to survive, even thrive. If participants fail and withdraw
from the process, no matter how promising it is, online Cross-cultural collaborative learning could not occur. As a result, elaborating and acquiring more understanding of the complex construct of coping could be crucial to identify and understand in what manner participants actually adjust themselves during the process of online Cross-cultural collaborative learning to acculturate themselves to the environment.

**A Brief Sketch of the Current Study**

In the current study, the researcher’s intention was to provide practical guidance on effective practices for native English-speaking online learning instructors and participants in the States collaborating online with international participants who are nonnative speakers of English. To achieve this goal, the researcher first, drew on a wealth of existing literature related to online cross-cultural collaborative learning. In the previous section, therefore, the researcher addressed and elaborated on several major issues: the inevitability of globalization; the proliferation of online cross-cultural collaborative learning; the nature of collaboration; and the interconnectedness of one’s language proficiency, coping strategies, and knowledge of culture.

Nevertheless, at the time of this writing, studies about online cross-cultural collaborative learning were relatively few, with even fewer on factors like participants’ language proficiency, coping strategies, and cultural intelligence as well as the way these factors interact with and impact one another. The intent of the researcher was to study these factors.

Taiwanese and American graduate students, recruited respectively from National Taiwan Normal University in Taiwan and Kent State University in the US, all with
professional backgrounds in education, were the participants in the current study. Solely online, they collaborated with one another to complete two problem-based learning (PBL) projects via WebCT Vista during a three-month period.

Because the current study resembled a pilot study, the researcher adopted grounded theory (GT) as the research methodology. GT is a mixed-design research methodology, integrating rigorous qualitative content analysis procedures with supportive quantitative data to discover emerging themes or patterns related to research topic. In fact, one of the promising features of GT methodology is that themes and patterns found are consolidated into testable theories for conducting further empirical research. Keeping the main intention of this study in mind—to provide effective online cross-cultural collaborative learning practices for native English-speaking online learning instructors and participants in the States when collaborating online with international participants who are nonnative speakers of English—the researcher focused on analyzing and synthesizing Taiwanese participants’ CMC patterns and discovered crucial insights from them.

Taiwanese participants’ language proficiency, problem-focused coping strategies, and cultural intelligence relate to their online learning performance; however, the mental resiliency accompanying those coping strategies could actually help participants in cross-cultural collaborative learning environments not only to survive but also to thrive.

The following literature review addresses the focus of the current study: online collaboration.
CHAPTER II: REVIEW OF THE LITERATURE

In the previous chapter, the author stated that despite geographical divisions, the pervasively emerging trend of globalization has offered myriad opportunities for people from cross-cultural backgrounds to collaborate with one another. In addition, with the rapid growth of information technology, various online learning platforms have become convenient sites where online cross-cultural groups can collaborate efficiently and effectively.

However, the primary language currently adopted in online communities is English, which might cause unpredictable challenges to online learning participants not adept in using English, particularly those adult international students or nonnative English-speaking learners who lack English language proficiency. As a result, the way they handle second language-related challenges, known as second language adaptation (SLA), is an issue worthy of study. Nevertheless, at the time of this writing few researchers addressed various second language-related online issues, especially with regard to participants from cross-cultural backgrounds with limited English proficiency. Numerous relevant issues have not yet been addressed properly and thoroughly; these include theoretical foundations as well as the impact of, the manner in which, and the extent to which language-related challenges occur in online cross-cultural collaborative learning.

Although online cross-cultural collaborative learning is a renowned and innovative manner of learning, it may not be a worry-free field for participants from cross-cultural background, for whom this environment presents uncertainties as well as
opportunities. Furthermore, for participants who intend to take part in online cross-cultural collaborative learning projects and successfully survive them, equipping themselves with a certain level of English proficiency, effective stress-coping strategies, cultural knowledge, and recommended collaborative techniques are crucial.

In the following section, the researcher has elaborated various issues related to online cross-cultural collaborative learning to demonstrate why attending to these variables is essential to ensuring that online cross-cultural collaborative learning is a successful and rewarding experience for participants from cross-cultural backgrounds speaking diverse languages.

**Diverse Aspects of Online Cross-Cultural Collaboration**

**Cooperative Versus Collaborative Learning**

To address online cross-cultural collaborative learning, the researcher must elaborate in depth collaboration, the major construct in this study. The argument about the differences between cooperative and collaborative learning has been heated for decades. According to Panitz (1997a, b), collaboration is a philosophical construct with various concepts embedded within it; whereas cooperation emphasizes the structures and techniques people adopt or follow in order to facilitate the accomplishment of an end product or goal. Savery and Duffy (1998) stated that cooperative learning tends be a teacher-centered approach; however, collaborative learning is an approach encouraging peer-interaction, emphasizing established techniques associated with constructivism and collective knowledge. In the cooperative learning model, teachers serve as instructors and facilitators, forming heterogeneous groups, managing positive interdependence
among participants, and even instructing members how to implement cooperative skills. On the contrary, collaborative learning is more student-centered, following the constructivist model, advocating active, self-regulated and non-structured interactive learning. It encourages students to take more responsibilities for designing their own learning pace as well as collectively establishing their own knowledge structure. Meanwhile, in the collaborative model, interaction among students is highly encouraged as well as emphasized so that students’ problem-solving capabilities and self-directed discovery can be fostered; in the cooperative learning model, students in general are not required to take the full responsibility for their own learning (Panitz, 1997b). Finally, cooperative learning can be regarded in a way as a branch or limited form of collaborative learning. For instance, in cooperative learning, students still work together in small groups; however, they work under structured schedules, activities, and guidance. In collaborative learning, groups of students may need to determine collectively the most suitable learning pace for them, setting common goals, and discovering solutions to particular problems presented to them. In both collaborative and cooperative learning, members are individually accountable for their work, and the work of the group is assessed as a whole (“What Are,” 2008).

Some researchers have shown that certain instructional approaches and techniques are perfect matches for collaborative learning, in particular PBL (Lee & Tan, 2004). Savery and Duffy (1998) asserted that PBL plays an important role in enhancing collaborative learning and is arguably one of the best approaches for instructors and learners implementing constructivist collaborative learning. Instructional design theorist
Reigeluth (1999) pointed out that the constructivist approach, PBL, and formative assessments are three indispensable factors supporting effectively executed collaborative learning. He argued that constructivism serves as the epistemological foundation of collaborative learning. Providing authentic problems, real-life cases, and vignettes embedded in dilemma, which are supposed to constitute the context of knowledge PBL learners should build and master, are all appropriate strategies to facilitate PBL learners as they tackle problems at their own pace and creativity (Reigeluth, 1999). Savery and Duffy (1998) also pointed out that ideally, students engaging in collaborative learning are autonomous and responsible for both themselves and other group members’ learning. Instructors following the collaborative learning mode are still responsible for providing assistance with timing and comprehensive guidance to some degree; nevertheless, unlike what is done in traditional educational settings, instructors no longer set the fixed knowledge framework, prearrange the learning context, and make summative assessments. In the ideal collaborative learning model, students learn with others; they are more like partners instead of competitors because others’ learning enhances as well as benefits their learning and vice versa. They develop strategies to deal with problems together, sharing cognitive developments collectively.

Johnson, Johnson, and Smith (1998) argued that although both cooperative and collaborative learning is applicable to PBL learning, slight differences exist. As in the real-life situations, challenges or problems people encounter may not even have definite solutions. Most of the time, they may need to learn how to seek available resources, inviting peers to assess situations collectively and determine how to work on solutions
most appropriate to the context. During the collaborative learning process, ensuring that meaningful and productive interaction take place among learners becomes the key issue because learners are, in fact, learning from the process of striving to reach consensus on agreeable solutions instead of finding the solution itself. Mimicking and transferring this real-life situation in the learning context is at the heart of implementing collaborative learning. In the cooperative learning mode, however, problems are generally tailored and predesigned, requiring definite solutions and introduction by facilitators in a systematic manner. Step by step, learners are guided to familiarize themselves with standardized procedures of learning and to discover the specific solution to the particular problem.

The analogy of the puzzle may best describe the differences between collaboration and cooperation. Hathorn and Ingram (2002) stated that cooperation could be regarded as a different kind of collaboration. Cooperation can be perceived as a project or task accomplished by a division of labor among participants. During the cooperative process, each member in the group has his or her own task and responsibility, but they may not coordinate with those of other group members so that mutual interactions among group members may not occur. In the analogy of the puzzle, each group member works on her or his own tiny piece of a large puzzle; however, they are not concerned what the final product looks like. Usually, under this mode, the group leader or instructor is responsible for trimming the final products and putting all pieces of the puzzle together.

By contrast, collaboration emphasizes mutual interaction and learning engagement, a collectively shared sense of purpose involving joint activities open to
collective examination, elaboration, and change. Surely, these particular features of collaborative learning could not be reached without productive negotiation, meaning-making, and the in-depth communication within and between group members (Hudson, 2003); therefore, in this mode of learning, each group member holds one piece of a large and complicated puzzle. They know that if they want to complete the puzzle correctly and effectively, not only should each one of them complete their task, but they should also constantly check one another’s progress, solve problems together, and constantly interact with peers to make sure they are all on the right track. In a way focusing merely on completing one’s own part is useless because everyone takes responsibility for the final product.

**Theoretical Foundations of Collaboration and Perspectives**

Readers may wonder why collaborative learning has been widely acclaimed and accredited by various researchers. The acclaim most likely results simply from the solid philosophical, psychological, and theoretical foundations underlying collaborative learning and the way it fits the nature of human beings’ cognitive development and learning (Sigel, 2010). In psychology, the theoretical roots of collaborative learning can be traced to Gestalt psychology, theories of cognitive development (Piaget, 1985), and Vygotsky’s (Wertsch, 1985) sociocultural development theories with regard to learners’ cognitive scaffolding and the zone of proximal development (ZPD).

**Gestalt Psychology**

Soegaard (2010) asserted that Gestalt psychologists attempt to understand psychological phenomena by viewing them as organized, interactive, and structured
wholes instead of the sum of their constituent parts. Thus, Gestalt psychology accentuates concepts like emerging properties, holism, and context; furthermore, Wertheimer (1982), one of its founders, indicated that human cognitive operations happen in two ways: productive and reproductive. In reproductive thinking, given even merely sparse information, human beings are prone to perceive reality as a meaningful whole, uncover the underlying patterns embedded in reality, make sense of probable relationships among compartments and larger contexts, and eventually attempt to find reasonable and coherent explanations. In other words, human beings prefer perceiving reality as a predictable entity, in which patterns are embedded and predictable regulations covertly operate behind seemingly unpredictable phenomena (Wertheimer, 1982).

Contrary to the conventional information-processing model proposed by a school of cognitive psychologists who considered human beings’ cognitive operation linear, irreversible, rational, and procedure-oriented, Gestalt psychologists argued that human beings’ information processing may not follow strict sequential and linear order (King & Wertheimer, 2005). The key to successful problem solving, as Wertheimer indicated, does not lie in following a fixed procedure but involves the ability to see the overall structure of the problem by executing productive and insightful thinking, discovering “what the structure of the whole requires for the parts” (Wertheimer, 1982, p. 212). For instance, they argued that in some cases, especially when one has entirely immersed oneself in the problems to be solved for a prolonged time, one’s insights and solutions to problems may emerge out of blue instead of sequentially. One’s “aha” experience in
terms of problem solving may best exemplify Gestalt psychologists’ information-processing argument (King & Wertheimer, 2005).

Gestalt psychologists also indicate that gaps, cognitive incongruities, or emotional disturbances are all important stimuli for productive learning, specifically, that meaningful learning does not occur until problems arise (Kearsley, 2011). The nature of human beings is such that they inherently seek and reclaim missing compartments in order to restore cognitive and emotional balance. Therefore, if taken advantage of wisely, emerging gaps, cognitive incongruities, and emotional disturbances provide precious opportunities to challenge as well as facilitate human beings to strive to reach the harmonic balance between individuals and reality—Gestalt.

How the construct of Gestalt could be implemented and applied into the collaborative learning setting remains a question to consider. Because of the emphasis on interconnectedness among human beings’ solution-seeking nature and the interactive dynamics between compartments and wholes, Gestalt psychology offers theoretical roots for collaboration and problem solving (Kearsley, 2011). Gestalt psychologists argued that when individuals are placed in a group, the psychodynamics among group members are fluctuating and fleeting instead of static and unidirectional. To reach a commonly shared goal, they have to develop a kind of reciprocally beneficial bond, closely relying on one another. This very interdependence phenomenon is referred by collaboration researchers as the social independence learning theory (Johnson, Johnson, & Morton, 2000; Stahl, 2010).
According to these researchers, while members placed in the group interact, patterns of their interaction could roughly be placed into three categories: (a) positive (collaborative), (b) negative (competitive), and (c) nonexistent (devoid of any notable interaction). Arguably, compared to other patterns of interaction, under the positive, or the collaborative environment, individuals are more likely to experience the holistic and comprehensive perspective of the reality, which is precisely the Gestalt, and based on that, discover the most appropriate solutions to the problem. In the collaborative mode, participants are more likely to assist instead of interfere with or hamper one another during the problem-solving process. Besides, during this process, emerging mutual trust among members strengthens the bond among members and raises the satisfaction level (Stahl, 2010).

**Cognitive Development Theory: Epistemological Roots**

Collaborative learning also has epistemological roots in cognitive development theories, in which Piaget (1985) is the founder and surely, a crucial figure in this field. In terms of human beings’ learning and cognitive development, Piaget viewed problems or challenges presented to individuals as a form of cognitive discrepancy between what one does not know and what one already knows. Also, according to Piaget, cognitive discrepancy generates cognitive disequilibrium or cognitive dissonance (Festinger, 1957). This occurs when perceived cognitive dissonance serves as motivation to elicit constant efforts to devise feasible strategies to regain cognitive equilibrium. As a result, cognitive development is generated through this cognitive equilibrium-regaining process. De Lisi and Golbeck (1999) asserted that the theoretical foundation of peer collaborative learning
is Piaget’s cognitive theory and that as individuals placed in a context full of novice information, they may discover contradictions between their habituated mental schema and novice stimulus perceived by them; consequently, cognitive disequilibrium takes place and in turn, cognitive dissonance emerges. Because learners are placed in a group and required to collaborate with peers to share limited resources available to tackle and solve problems, their autonomous and self-directed learning mindset could arguably be facilitated and manifested to the fullest. Under this situation, implementing peer learning strategies on the basis of collaborative learning may generate the best result of cognitive growth. In other words, over a prolonged period of time deliberately immersed in compartments of information, collaborating group members may gradually figure out where and in what way they could seek resources available to solve problems to regain cognitive equilibrium. In addition, during the process of collaborative learning, group members also learn how to manifest their own uniqueness but still fit the norm of the group to make proper contributions. As a result learning transference occurs, and members are more likely to integrate what they learned in the collaborative learning setting, such as a variety of problem-solving skills, into real-life situations (DeLisi & Golbeck, 1999).

In fact, according to DeLisi and Golbeck (1999), even the process itself, in which group members collectively figure out how to implement collaborative learning, can be considered cognitive challenges and learning opportunities for collaborative group members. They argued that under such conditions, learners are bound to encounter conflicts causing cognitive disequilibrium, which, however, provide opportunities to seek
out effective procedures to regain not only their cognitive balance but also the role they can assume in the group. In other words, under the collaborative peer-learning mode, not only problems presented to group members are “the problems” but so are the very process and techniques participants strive to adopt to manage the problems. It requires participants to exercise higher-order critical thinking, consequently enhancing learners’ capabilities of perspective-taking. Learning is therefore not all about learning something individually; in the collaborative learning mode, learning is also about how to work with peers as a group (Schoenfeld, 1992).

**Vygotsky’s Sociocultural Perspectives on Collaborative Learning**

Beside Piaget, Vygotsky is no doubt, another academic giant in the field of education and psychology. Similar to Piaget, Vygotsky asserted that cognitive development may be attributed to individuals’ constantly making efforts to organize and incorporate novice information into what they already know, the mental schema, or prior knowledge. Vygotskyian researchers also believe that learning is not entirely a cognitive entity: It is affected by the particular context in which learners are placed; in other words learning is context-dependent, and each individual’s cognitive maturation, physiological development, beliefs, and attitudes are constantly reshaped (Vygotsky, 1934/1986).

Because learning is relatively context-specific, it may be the reason that compared to Piaget, Vygotsky (1934/1986) put more emphasis on the implicit impact of cultural and contextual factors on learning. Namely, although based on Piaget’s claim, learners’ cognitive readiness, such as individuals’ mental and physiological maturation, serve as the prerequisite for the occurrence of meaningful learning; Vygotsky argued that learning
could still be somewhat facilitated and accelerated if individuals could interact with
others and assisted by proper semiotic tools, such as language, symbols, and well-
designed presentation of teaching materials (Vygotsky, 1934/1986). Specifically,
Vygotsky (1934/1986) argued that individuals could not only learn but also be capable of
learning in a nonsequential way at an accelerated rate if they could be properly assisted
by advanced learners. During the process of learning, skillful individuals with expertise
can assist the less experienced to construct knowledge collectively. The very concept of
advanced learners originates from cognitive scaffolding, constructivism, and zone of
proximal development (ZPD) (Slavin, 2003, p. 30). Vygotsky proposed that one could
even learn more effectively and efficiently in an environment where learners with
advanced knowledge, such as instructors or teachers, could collaborate with
inexperienced learners, such as students, to organize learning contexts into meaningful
entities (Garton, 2004). This process in which advanced learners provide assistance to
novice learners for knowledge guidance and construction is called cognitive scaffolding,
which facilitates novice learners’ reaching the zone of proximal development (ZPD) to
the fullest stage. ZPD is the difference, the room for cognitive growth between what
individuals can already do and what they could possibly accomplish with advanced
learners’ or instructors’ assistance. B. Kim (2001) indicated that when learners are in an
environment that encourages or assists them to interact as well as put effort into
accomplishing a goal with more cognitive complexity, they strive to stretch their ZPD.
During this very process, meaningful learning thus takes place. Similar to Piaget,
Vygotsky also suggested that learners should be placed in an environment full of
information beyond what their current cognitive capabilities can handle, then receive assistance from advanced learners or peers in order to move toward to the next higher level of learning. During this cognitive scaffolding process, both learners and instructors benefit (Garton, 2004).

**Feasible Strategies and Conditions for Collaborative Learning**

Because collaborative learning has solid roots in theoretical foundations, conditions or contexts that may be the most suitable for exercising collaborative learning should be considered. First, viewing from the perspective of instructional design, Johnson and Johnson (2000) summarized five strategies for facilitating small-group collaborative activities:

(a) promoting a mindset of appreciating and promoting interaction and interdependence among students, (b) making group-based formative assessments on a regular basis, (c) encouraging interpersonal interactions that could promote each member’s higher-order thinking and different perspective taking, (d) holding individuals accountable and responsible, and (e) frequently facilitating interpersonal and within-group members’ social skills. Based on the concept of the classroom website (“What Are,” 2004), some effective instructional strategies can be adopted to enhance a productive collaborative learning: (a) identifying clear questions at the outset and showing how these questions may be related to students’ interests, abilities, and learning goals; (b) resolving small-group conflicts as soon as they arise and showing students how to prevent similar troubles in future; (c) creating rubrics at the beginning of any assignment and using these for concise references to guide the learning process and
assess final work; and (d) helping students reflect on their progress of learning constantly and expecting excellence from all students. Although it may temporarily generate challenges, keeping the diversity and heterogeneity of the collaborative group is still beneficial in the long run (“What Are,” 2004).

Conditions and strategies addressed above have primarily related to collaborative learning taking place in the traditional education setting; nevertheless, collaborative learning is also applicable to the online learning environment. In fact, if several fundamental rules of collaborative learning are followed, collaborative learning can be transferred effectively from the traditional classroom to the online environment.

For instance, Littleton and Hakkinen (1999) and Rovai (2004) argued that except for heeding several conventional collaborative strategies, instructors, especially in the online learning environment, should put more focus on cultivating online learning participants’ self-efficacy and inner motivation to collaborate and on fostering the sense of community among them. By doing so, online learners’ satisfaction level will be enhanced; consequently, the retention rate for participants’ online collaborative learning would be higher. Compared to traditional collaborative learning, they also argued, because online learning environments are full of uncertainties, giving and receiving constant and instant feedback, no matter to online learning instructors or participants, play an even more important role because they contribute to promoting online learning participants’ perseverance and motivation (Littleton & Hakkinen, 1999; Rovai, 2004).

Except for creating sense of community and constantly providing instant and concise feedback to online collaborative learning participants, some online learning
researchers also agreed that in order to benefit most from implementing online collaborative learning, the computer-mediated communication (CMC) environment should be tailored to reflect the genuine spirit of the constructivist learning approach. For instance, Bacalarski (1994) and Shirky (2003) argued that well-tailored CMC software could serve as a social network designed for collaborative learning, and Vygotsky’s theory could guide work in the CMC environment for implementing productive communication. CMC designers or instructors may examine whether they designed appropriate semiotic tools or instructional strategies to assess participants’ ZPD adequately and whether they have provided sufficient scaffolding opportunities in their design for inviting advanced learners’ engagement in assisting inexperienced learners. Designers may furthermore ask themselves whether they have provided sufficient learning opportunities as well as cognitive challenges for online collaborative learning participants to work as a cohesive and interactive group to exercise their problem-solving skills to the fullest (Mason & Rennie, 2006).

**Collaboration in the Cross-Cultural Setting**

In the 21st century, collaboration could take place in the traditional as well as online setting; however, if learners coming from cross-cultural backgrounds speaking diverse languages must collaborate with one another, the proper instructional strategies needed to unite learners together in order to finish a project or fulfill a desirable goal set for their learning are a matter of concern.

Again, Vygotsky’s sociocultural approach referenced above seems to be favored by a wide range of researchers in cross-cultural collaboration. For instance, Berrien
(1970) and Andre (1981) have indicated that the most suitable learning and teaching strategy in the cross-cultural setting may arguably be the collaborative learning strategy based on Vygotsky’s sociocultural constructivism approach. In the ideal situation, each participant from a different cultural background is encouraged to contribute her or his unique concepts and opinions to the group, and this very spirit resonates with Vygotsky’s primary argument on human beings’ knowledge construction: Meaningful knowledge is constructed collectively instead of unilaterally imparted, and the deeper learning does not emerge until each participant in the collaborative learning group takes full responsibility for tailoring and self-directing his or her own learning as well as contributing individuals’ accomplishments to the whole group (Weber, Maher, Powell, & Lee, 2008).

In terms of the starting point for implementing cross-cultural collaborative learning, cross-cultural collaborative groups must determine primary issues to work on first. Cross-cultural anthropologists Headland, Pike, and Harris (1990) and Morris, Leung, Ames, and Lickel (1999) asserted that cross-cultural collaboration should start from the emic orientation, or the insider’s point of view, and then move to the etic orientation, or the outsider’s point of view. It means that the context-specific problems perceived by collaborative learning group members as imminent challenges should be addressed and presented first. Specifically, they should work on feasible solutions particularly suitable for addressing problems in this very context. After that, they should gradually move into the etic orientation and generalize context-specific findings into a larger sample or context, making them more applicable to other similar conditions.
Yale Business School professors K. Smith and Berg (1997) also provided practical tips for implementing cross-cultural collaboration based on thinking similar to that referenced above. They suggested that people should start from respect and work on the differences among group members and then strive to discover commonalities among them. These tips included learning how to learn together, valuing contributions made by each individual, and planning a series of brainstorming as well as perspective-taking cross-cultural communication activities, such as cross-cultural vignettes or dilemmas. By doing this, K. Smith and Berg believed, people’s cross-cultural awareness can be promoted, the covertly shared common ground can be recognized, and the collective consensus can eventually be reached. Plenty of collaboration researchers in different fields also agreed that learning to address and appreciate individuals’ uniqueness must occur first and then moving to commonalities next may be the proper orientation cross-cultural collaborative learning groups should follow, no matter in the traditional or the online learning environment (Nonaka & Nishiguchi, 2001).

Besides providing the suggestion of starting from differences then moving to commonalities, K. Smith and Berg indicated that the goal of cross-cultural collaborative activities is to educate cross-cultural group members to confront challenges in a problem-solving mindset, learning how to share their own perspectives and solutions with others and respecting others’ perspectives as well. Consequently, during the process of interaction, each group member from diverse cultural backgrounds could be empowered and willing to channel the group’s dynamics in a task-oriented, problem-focused direction (1997).
In a well-known and frequently cited book entitled *Teaching and Learning in a Diverse World*, Ramsey (2004), a cross-cultural researcher, emphasized the importance of implementing collaborative instructional strategies in the cross-cultural education setting. She indicated that one of the best approaches to facilitating collaboration by participants from diverse cultural backgrounds is to establish a nonthreatening environment first, in which mutual respect and understanding among group members could be fostered. Once this supportive foundation is established, participants may acquire cross-cultural awareness and learn to respect other cultures, simultaneously, maintaining pride in the uniqueness they inherited from their own culture. As participants equip themselves with cross-cultural awareness, students from diverse backgrounds are more likely to learn and work cohesively as a united group, and genuine and sincere cross-cultural collaboration emerge. She also indicated that exercising collaborative techniques accompanied by problem-solving approaches is particularly effective in terms of enhancing cross-cultural awareness among group members because a nonthreatening environment provides opportunities for learners from cross-cultural backgrounds to immerse themselves in a supportive context, at the same time learning to interact with one another in a culturally appropriate manner without fear of serious consequences. Even if they make mistakes, the constant trial-and-error process serves as the precious learning moment to extend their ZPD on cultural knowledge and cognitive growth (Ramsey, 2004).

In fact, the construct of collaboration even earns support from what has been called-traditional Eastern thinking. Pelzang (2004), a Buddhist psychologist, asserted that the concept of the dependent arising (緣起) lies at the heart of Eastern thinking,
which has been pervasive in all major ancient Eastern cultures, such as India and China. The notion of the dependent arising conveys a holistic view of reality. Any single element, no matter how trivial it is, interacts with and is simultaneously affected by the whole entity. The whole cannot be attained or completed without the active involvement of each tiny part nor can each compartment be manifested and functional without placement in the whole as the context. A puzzle must be completed by each individual piece; however, each single piece of puzzle is useless unless presented and perceived as part of the puzzle. Although perhaps not completely evident most of the time, people influenced by Eastern thinking are affected by the idea of the dependent arising, allowing it to guide their behaviors. They are more likely to contribute their efforts to the group, compare their efforts with those of others in the group, and attribute the failure of a group to all members instead of a specific individual (Shi & Shi, 1995). Keeping the construct of dependent arising in mind may be tremendously beneficial to instructors and participants in addressing some participants’ behaviors and mindsets, especially when they are from Eastern cultural backgrounds (Dalai Lama & Cutter, 2009). Until now, however, researchers have rarely addressed the way the construct of the dependent arising may affect participants’ behaviors and preference for certain learning strategies or learning contexts in the cross-cultural collaborative learning setting.

To sum up, cross-cultural collaborative learning, no matter whether it takes place in the traditional setting or online, provides unprecedented opportunities for participants from all cultural backgrounds to interact and communicate with one another. Although challenges and obstacles exist, interaction among diverse groups may yield desirable
advantages. Numerous researchers have indicated that learners’ problem-solving skills, 
mental flexibility in handling complicated problems, quality of decision making, 
autonomy of learning, interpersonal communication capabilities, critical-thinking, cross-
cultural awareness, foreign language skills improvement, and communication 
competence, just name a few, could also be enhanced and facilitated to certain extent 

**Cross-cultural Collaborative Learning Online**

When cross-cultural collaboration takes place in the online learning setting, it can 
be enhanced by strategies associated with online learning, cross-cultural groups, and 
collaboration. In fact, whether in the traditional face-to-face or the online environment, 
ensuring the constant, positive and productive interaction among cross-cultural group 
members may be the key (Vatrapu & Suthers, 2007). Nevertheless, to ensure smooth and 
effective interaction, some factors must be addressed and attended.

First, according to Vatrapu and Suthers (2007), to ensure productive interaction 
among cross-cultural group members online, an essential ingredient is technological 
intersubjectivity, which entails a technology-supported interactional relationship between 
two or more participants. For instance, in the online setting, participants from certain 
cultures may prefer some sequential acts and discourse over others, which in turn 
generate different peer perceptions toward online learning. Vatrapu and Suthers argued 
that these covert influences should be recognized and handled. Eventually, they said, 
persons from various cultural backgrounds who experience technological intersubjectivity 
find their own most comfortable and culturally appropriate way to implement CMC.
Second, Rovai (2004) addressed online cross-cultural collaboration interaction from a more philosophical and epistemological perspective, arguing that what operates under the construct of online collaboration is, in fact, the manifestation of constructivist learning approaches; therefore, CMC, constructivist approaches, and cross-cultural group members properly placed in the online setting make the perfect combination for learning.

Third, some researchers have argued that if learners from cross-cultural backgrounds equip themselves in advance with some basic collaboration skills and knowledge, the “know how” per se, then the implementation of cross-cultural collaboration online could be more efficient and smooth. As a result, learners with the proper knowledge of collaboration could save plenty of time and effort dealing with trivial and irrelevant issues and put their primary focus on solving the problems presented to them. By doing so, they will not only gain problem-solving skills but also cognitive complexities, SLA language acquisition, and cross-cultural awareness (Belz, 2003; O’Dowd & Eberbach, 2004; Brammerts, 1996).

Hixon (2008) verified and supported the foregoing arguments in a study on various online collaboration modules. She stated that especially in the online learning environment, if members of each collaborative team have a clear understating of what collaboration is supposed to be in advance, gain proper instructions, allow productive communication to flow among members, and enjoy certain levels of flexibility while learning, including learning pace, tasks, and form of assessments, then the collaborative experience could be very rewarding and productive to online learning members from cross-cultural backgrounds.
Finally, the primary characteristics leading to effective cross-cultural communication and collaboration include features, such as flexibility, reciprocal support, perspective-taking activities, and interactive as well as interpersonal bonds. L. Anderson, Blumenfeld, Pintrich, Clark, Marx, and Peterson (1995) argued that via computer mediated communication (CMC), the major characteristics illustrated above could be reached and even enhanced. Marchionini (1988) agreed that the current emerging information technology is arguably similar to one’s cognitive operation while one is engaging in higher-order thinking. As a result, in the online cross-cultural collaborative setting, learners need to devote themselves to reaching consensus on solutions to problems. During the process of cognitively interacting and engaging with other people, productive outcomes ensue, including higher-order thinking and perspective-taking skills.

In summary, productive and high-quality interpersonal communication online is the primary factor leading to a successful online cross-cultural collaborative learning experience. The advantages of implementing online cross-cultural collaborative learning have been made clear by numerous researchers. For instance, Belz (2003) proposed a new construct called telecollaboration, arguing that if properly implemented, telecollaboration or online collaboration via CMC could be an effective strategy to enhance participants’ intercultural awareness, communication competence, even second language acquisition (SLA). Her arguments on SLA are also supported by K. L. Kim and Curtis (2002), who indicated that although insufficient English language proficiency could act as a barrier to international students, engaging in online collaboration with native speakers of English could be a rewarding experience because interacting with
native speakers raises cross-cultural awareness and confidence as well as self-efficacy in English proficiency for nonnative speakers of English.

Language and Human Cognition

Why and How Language-Related Issues Pose Challenges

In the previous section, the researcher elaborated various issues related to collaboration, including its theoretical foundations and how it works in cross-cultural collaboration as well as its implication and application in the online learning setting. Nevertheless, especially in cross-cultural collaboration setting, language-related issues require further attention and elaboration (K. L. Kim & Curtis, 2002; Ware, 2004). Researchers have pointed out that in the online collaborative learning environment, language-related issues may emerge as challenges to participants from cross-cultural backgrounds, especially when participants from cross-cultural backgrounds speak diverse languages but are required to collaborate with one another. When participants in the online learning setting lack a commonly shared language but choose an unfamiliar language to communicate, English for instance, various hindrances may emerge; therefore, a specially designed multilingual CMC system may be necessary (Ishida, 2006). Some have argued that participants’ personal traits, such as gender, age, Internet use, or preference for CMC communication, could present a challenge as well (Thayer & Ray, 2006). Besides, each cultural group’s favored manner of communication may differ (Singh & Rampersad, 2010). For instance, in the online cross-cultural collaborative learning setting, participants’ mastery levels over spoken English vary; so while they
communicate with one another in the synchronous form online, they may be unable to converse English effectively and fluently.

How language-related issues impact online cross-cultural collaborative learning can be clarified first in terms of psycholinguistics and then in terms of the way one’s native language, or L1, affects cognitive capabilities and second-language acquisition and learning.

**Inner speech, cognitive development, and intersubjectivity.** According to Vygotsky (1934/1986), both languages and symbols, especially those related to one’s mother tongue, are critical tools for human beings to mediate and facilitate cognitive development. What most clearly differentiates Vygotsky and Piaget, both of whom may be regarded as proconstructivism, is that Piaget emphasized physiological and psychological maturation as the prerequisite for cognitive development; Vygotsky, language and symbols (semiotic tools). Vygotsky argued that even if learners are not physiologically and psychologically mature enough, cognitive development can still be facilitated to some extent if appropriate semiotic tools are systematically introduced by advanced instructors (1934/1986).

For Vygotsky, language plays such an important role because the very language one uses to communicating, the native language, generally called L1 by linguistics researchers, is the most important semiotic and cognitive tool. Throughout life, the native language is used to regulate the cognitive as well as emotional functions needed to think and feel as a member in a particular society or culture (Anton & Dicamilia, 1999). In other words, how individuals in a certain society or culture make sense of the context,
retrieve information, register and interpret sensory perceptions (e.g., color or semantic recognition), and form conceptual constructs are all covertly mediated and affected by the language one uses as well as how proficiently one uses his or her own native language.

In addition, Vygotsky (1934/1986) stated that children gradually learn to differentiate two kinds of speech: one directed towards others as the socially functional speech for interpersonal communication, and the other, merely self-directed and serving intrapersonal communication. By shifting between interpersonal and intrapersonal communication (the code-switching process), children comprehend the difference between self and others and gain intersubjectivity, according to the so-called theory of mind (Wertsch, 1995). Without the assistance of proficiency in L1, however, the transformation from intrapersonal to interpersonal communication becomes difficult; consequently, the theory of mind does not apply.

The native language, or L1, is very powerful in forming, cultivating, and regulating our cognitive development and mental schema. Initially, the L1 is strongly related to inner speech. According to Vygotsky (1934/1986), this is so because one’s mental operation of “thinking out loud,” or self-dialogue, plays the crucial role in L1. Thinking out loud has been termed inner speech or private speech by Vygotskians. As its name suggests, inner speech is one’s self-guided, self-regulated and reflection-oriented speech constantly spoken, or inaudible or implicit thoughts to self in order to direct and converge scattered cognitive capabilities into a focused and well-organized mental schema; based on that, one could proceed to tackling complex cognitive tasks. Azimita (1992) indicated that when individuals use inner speech, they are not trying to talk to
another individual to convey concepts. Instead, they are talking to themselves, trying to regulate, and even regain control over their own selves because exercising inner speech could help them arrange and process various demanding mental tasks in a systematic manner. Besides, inner speech provides individuals with essential complex mental operations required for one’s cognitive growth, such as attention, planning, monitoring, self-motivating, pacing and decision-making (Vygotsky, 1934/1986). Recently, researchers of the Vygotskian archive argued that if reexamining and retranslating Vygotky’s important articles, based on Vygotsky’s argument, the proficiency level of one’s inner speech is related to how well one could exercise collaborative skills as well (van der Veer & Yasnitsky, 2011). Analogically, one’s private speech is like a magnifier through which all scattered cognitive abilities could be channeled into one focal point from which to deal with the complex cognitive tasks people encounter.

Second, except for regulating one’s cognitive abilities, psychologically speaking, exercising inner speech is deemed a very important way to allow one’s cognitive strength or rationality to override one’s irrational and afflicted mental state. For instance, when individuals are placed in stressful situations, the speech they continuously in their minds to calm themselves down is the manifestation of their exercising inner speech. As a result, the very language they unconsciously and automatically adopt in such situations will be the language with which they are most familiar and comfortable, that is, their L1 (Morin, 1995).

Third, inner speech plays mediates intrapersonal and interpersonal communications. Vygotsky argued that cognitive maturation starts with exercising
intrapersonal communication then moves to interpersonal communication. Thus, mastery of inner speech to regulate cognitive abilities is necessary as is the incorporation of outer information into prior knowledge, or the mental schema; then one is capable of interacting with and responding to outer world accordingly. During this complex intra–inter communication transition process, one’s inner speech carried by L1 serves as the major facilitator (Vygotsky, 1934/1986; Wertsch, 1995). Anton and Dicamila (1999) indicated that in order to construct a well-organized cognitive mental schema into which novice information could be incorporated and internalized logically, one must constantly execute inner speech to reach a higher level of cognitive complexity and competent interpersonal communication skills. Azmitia (1992) verified the positive and evident correlation between children’s use of private speech with their critical thinking and cognitive performances.

Finally, following this line of argument, intersubjectivity becomes an issue requiring further examination. Human cognitive development cannot be separated from the social context in which it is placed, and it must be established with regard to each individual’s intersubjectivity. Rommetveit (1985) indicated that intersubjectivity is a collectively constructed knowledge agreement implicitly shared among people in a certain context or culture. Namely, intersubjectivity refers to meanings collectively constructed by people (subjectivity) during the process of their constant interactions, and then those are used as an everyday resource to interpret the meaning of elements of social and cultural life. People competent in intersubjectivity have the ability to share meanings constructed by others and to use these collective knowledge constructs as mental
resources to incorporate, respond, as well as interpret novice information emerging in a particular social or cultural context without conflicts (Rommetveit, 1985). Notably, the ability to exercise inner speech facilitates the formation of intersubjectivity (Rommetveit, 1985). Without the mediation of inner speech as well as its role in establishing the balance between human beings’ internal and external cognitive resources, maintaining intersubjectivity would be impossible. As a result, if opportunities to fully exercise L1 are absent, challenges are bound to occur.

**L1 is crucial.** The researcher has argued that according to Vygotsky (1934/1986), the transition from intra- to interpersonal communication transition cannot be made, cognitive growth cannot be fully developed, and intersubjectivity cannot be reached until inner speech is fully functional and capable of operating complex higher-order cognitive abilities, such as metacognition, self-regulation, and self-monitoring. Anton and Dacamila (1998) provided empirical evidence to verify the argument, demonstrating that in terms of one’s cognitive complexity and problem-solving capabilities, ESL learners with competent L1 capabilities outperform peers with moderate or lower levels of L1 mastery. In terms of SLA, the mother tongue is, therefore, actually the facilitator instead of the obstacle to second-language acquisition.

Anton and DeCamila (1999) further argued that compared to L2, L1 actually plays a more important role in providing cognitive scaffolding assistance so that learners can reach the ZPD in the bilingual or multilingual language-learning classroom. In a study on the SLA acquisition in a cross-cultural classroom, Pica (1994) indicated that the mastery level of L1 is one of the most important facilitators to enhance SLA, that is, the
acquisition and maturation of the second language, L2. Students who come into the ESL classroom with mastery level of L1 in general significantly outperform students with scant L1 language competence.

Exercising inner speech carried by L1 enhances psychological well-being as well. According to DiCamilla and Anton (2004), not only can inner speech be observed in children but also among adults while they learn a second language. In the cross-cultural collaborative setting, adult learners may have to perform tasks in a language in which they lack mastery; hence, they constantly make self-directed utterances in their native language, performing code-switching. This self-utterance serves two purposes. On one hand, while adopting inner speech in their own mother tongue, ESL learners can channel their cognitive capabilities into working on the task itself as well as the problem-solving process. On the other hand, by exercising inner speech in the mother tongue, they may create a psychological distance for removing stress, in which they avoid the stressful challenges they encounter and regain mental strength. In other words, cognitively speaking, ESL learners need to exercise their own inner speech carried by L1 to figure things out and make sense of the problems in context; psychologically, they also need their native langue as a buffer, into which they can retreat to remove the stress of speaking English for a while.

Considering all issues elaborated above yields an understanding that if participants from cross-cultural backgrounds are deprived of their opportunities for fully exercising inner speech carried by L1 during the process of online cross-cultural collaborative learning, both their cognitive maturation and psychological wellness will be
hampered. Unfortunately, participants with no other options but to use English to interact with one another online must face these challenges and cope with them.

**Impact of other language-related issues.** Except in the case of L1 deprivation causing the malfunction of inner speech, which negatively impacts online cross-cultural collaboration, other language-related factors, including (a) adoption of CMC, (b) cognitive advantage and psychological wellness, (c) learning style preference, (d) cognitive scaffolding, and (e) host communication competence, may also influence online cross-cultural collaboration. In the following section, the researcher addresses each factor.

Currently, the major tool for implementing online cross-cultural collaborative learning is through CMC, which takes two forms: asynchronous and synchronous communication. Asynchronous and synchronous communication impact online cross-cultural collaborative learning. First, in the synchronous communication mode (e.g., online conferencing), participants in online learning may need to speak or respond to one another back and forth instantly in English, the language with which they may not be very familiar (Kaye, 1992). Deprived of the reflection and response time needed to exercise inner speech in L1, their native language, these learners may encounter a good deal of stress and awkwardness in trying to communicate in an unfamiliar language. Consequently, one may infer that implementing the synchronous form of communication may impose emotional as well as cognitive demands on ESL participants; this argument has actually been verified by ESL online learning researchers (Sotillo, 2000).
Because synchronous communication may not be ideal to ESL online learning participants, writing in the L2 (English) may be an ideal alternative participants speaking diverse languages from cross-cultural backgrounds can use to interact and communicate. In fact, the psychological and cognitive mechanism operating behind writing is far more complicated than one might think. According to psycholinguistics Flower and Hayes (1981), writing is one of the most complicated cognitive activities. Writing is all about one’s engaging in a heavily cognition-involved mental operation, in which the writer constantly plans, transcribes emerging ideas into a presentable and understandable form, and revises to make contents intended for publication more comprehensible and understandable. Kellogg (1996) identified two phrases in writing: (a) formulation (thought-formulated) and (b) execution (thought-presented). The goal of writing is thus, in the formulation stage, to access, regulate, and organize the writer’s originally formulated mental constructs, and then in the execution stage, to exercise cognitive strategies available to make emerging mental constructs presentable and understandable to others. Accordingly, proficient writers are those capable of bridging the discrepancy, or narrowing the gap between formulation and execution. They strive to concisely and correctly depict and present what they think and deliver the contents of their thoughts to others without causing too much misinterpretation and misunderstanding. From the perspective of psycholinguistics, we could say writing is, in fact, the externalization, or the mental manifestation, of one’s inner speech. Furthermore, writing could be also considered as the reflective process in which one’s inner speech is externalized by
culturally shared semiotic tools and then presented in the socially appropriate context to contribute to the collective intersubjectivity (Lantof & Thorne, 2006).

If ESL online learning participants have no options but to adopt an unfamiliar language, such as English, to interact with others via writing, then probable consequences require elaboration. First, in most cross-cultural collaborative groups, English and the English written online learning interface are still used by a majority of learners, no matter in the online or the traditional setting (Kim & Curtis, 2002; Shih & Coonetilleke, 1998). Consequently, writing or typing in English are the primary activity online learners from cross-cultural backgrounds engage in when working in the asynchronous communication form.

Nevertheless, researchers have pointed out that which language one adopts as the primary communication tool online is crucial in many aspects (Shih & Coonetilleke, 1998). Caldwell-Harris and Aycicegi-Dinn (2009) stated that while addressing or dealing with the same topic, compared to L2, speakers who use their mother tongue, L1, enjoy more cognitive resonance and emotional attachments. One’s L1 could express more complicated meanings and the delicate emotions one perceives and feels. They also argued that while speakers use L1, they become more confrontational, and assertive in expressing their true emotions and thoughts. In contrast, when they managed to hide themselves from genuine emotions, for example, telling lies, they are more prone to use L2 (Caldwell-Harris & Aycicegi-Dinn, 2009). As a result, even when participants adopt the asynchronous form, writing, to communicate in the cross-cultural collaboration setting, their cognitive strength may still be compromised to some extent.
Second, in the previous section, the researcher argued that languages not only distinguish people from culture to culture, but they also generate profound impact shaping human minds and learning in various perspectives, ranging from psychological traits, learning styles, and learning preferences to motivation and satisfaction with learning, just to name a few. For instance, owing to the particular educational or cultural context in which ESL learners have been fostered for a long period of time, some ESL learners may find their native English-speaking instructor’s or peers’ communication styles or instructional approaches somewhat clash with their original cultural norm or epistemological beliefs. In the worst case scenario, ESL learners may not be highly motivated to engage in collaborative activities with their peers. The consequence is participants’ lukewarm attitude toward online collaborative learning and unsatisfactory results.

Cho (2003) indicated that especially for EFL or ESL learners, the target language they choose as a major communication tool in the ESL classroom generates various impacts on learners’ psychological traits, such as their self-efficacy in second-language acquisition. Cho’s argument has the support of Ehrman (1996), who indicated that EFL learners’ mastery level over the second (or foreign) language dramatically affects their communication patterns, learning styles and satisfaction levels as well as the self-efficacy. In *Second Language Learning Difficulties: Looking Beneath the Surface* (1996), her renowned book about ESL learners, she asserted that while ESL learners communicate with peers in English, they are prone to be passive and reticent as well as
nonassertive. They are also more sensitive to how their language performances are perceived by native speakers or even their ESL peers.

In addition, Ehrman (1996) also pointed out that ESL learners’ perceptions of their own language capabilities are tentative; their language self-efficacy is mainly generated from various pieces of implicit or explicit feedback they receive from the outer environment, especially from native speakers. When ESL learners communicate with native speakers in English, their English self-efficacy is negatively impacted, which may in turn, result in their withdrawal, mental disengagement in learning, reticence, and nonassertiveness if the experience is perceived as a failure, bringing shame to the ESL speaker (Ehrman, 1996).

Third, the very language that participants adopt also impacts their capability to scaffold. According to constructivists, the process of knowledge building is not top-down imparted, fixed, linear, and rigid. Instead, it is more like a cyclical pendulum, a recursive and heuristic process established by the collective effort exerted by each individual group member’s contributions. For instance, Wood, Bruner, and Ross (1976) illustrated six functions of scaffolding, indicating that successful scaffolding could enhance one’s higher-order thinking, simultaneously reducing one’s frustration as well as increasing one’s self-esteem. Psychologically speaking, if advanced learners can successfully implement cognitive scaffolding strategies, inexperienced learners’ stress and frustration during the problem-solving process could be significantly reduced (Roseik, 2003); however, during this collective knowledge-building and cognitive scaffolding process, participants who lack competence in L1 lose the advantages advanced learners can
provide. Already struggling in dealing with their own language competence, less experienced learners of L2 may not be able to reap the benefits of help from advanced learners. Finally, every language includes both verbal and nonverbal aspects. In terms of nonverbal aspects of language and how it may influence one’s language proficiency, Y. Kim (1988) proposed a concept in his study called *host communication competence* (HCC), to refer to one’s overall capacity to decode and encode information perceived from outer worlds. According to Y. Kim, one’s mastery level of HCC plays important roles in determining how one acquires language proficiency and cultural awareness in the host culture; without high HCC one may encounter diverse language and cross-cultural problems with regard to acculturation. Most important of all, Y. Kim argued that one’s acquisition and mastery level of HCC strongly correlates with one’s full recognition and comprehension of nonverbal cues, such as implicit cultural norms and communication patterns covertly operating behind the host culture society. Ware (2004) stated that the major difference between face-to-face and CMC lies primarily in its lack of nonverbal cues. In the traditional face-to-face setting, ESL learners, even when they have not yet mastered English, could still deliver or perceive information correctly based on large amount of nonverbal cues.

In the online learning environment, however, valuable nonverbal cues are absent. As a result, participants do not have useful and ample nonverbal cues to refer to, and the only means participants can adopt to perceive and interpret information are based solely on written text. Even if they can recognize and then perceive nonverbal cues, they may interpret them incorrectly and inappropriately because of a lack of proper cultural
knowledge carried by the host language as the background information (Ware, 2004). Under this situation, implementing cross-cultural collaborative tasks, which in general require participants’ constantly making productive and in-depth meaning negotiations with one another, becomes demanding and challenging (Morse, 2003).

**Challenges Related to Cross-Cultural Collaboration**

As indicated previously, based on the literature highlighted above, collaborative learning is a promising instructional strategy for enhancing learners’ higher-order thinking, no matter in the traditional educational setting or online learning environment. Nevertheless, tremendous psychological and physical efforts on the part of participants may be necessary to execute online collaboration effectively, especially participants from cross-cultural backgrounds speaking diverse languages. K. Smith and Berg (1997) even argued that group work may be inherently contradictory and burdensome to human nature. Besides, the online cross-cultural collaborative learning may also bring challenges because plenty of complicated factors come into play. Based on existing literature, the researcher summarizes probable challenges with regard to online cross-cultural collaboration in the following section.

First, because of the rapid development of information technology, people from diverse cultural backgrounds are likely to find themselves collaborating online, where they have no other choice but to interact and communicate via asynchronous or synchronous CMC (Parry & Dunn, 2000). As a result, challenges related to CMC may occur, and the various adjustments learners have to make may be burdensome. Song, Singleton, Hill, and Koh (2004) presented several factors, including technical problems,
lack of sense of community, time constraints, and difficulty understanding the objectives of collaboration, as probable obstacles online participants constantly encounter in the CMC environment.

Second, collaborating online, cross-cultural group members speaking diverse languages may constantly struggle with language-related, especially English-related, issues. For decades, English has been a universal language, dominating all mainstream mass-communication tools, including online learning platforms. Online learning participants speaking diverse languages will, in general, adopt English as their major communication tool (Pennycook, 1994). Predictably, those nonnative English-speaking participants may encounter challenges related to English. In the previous section, the researcher elaborated reasons that these language-related issues are considered challenges from psycholinguistic perspectives. Also, in a pilot study conducted by the researcher, the author discovered that nonnative English speakers may encounter language-related challenges online, such as how to (a) understand and respond to postings, emails, and online documents in a grammatically appropriate and pragmatic manner, (b) correctly comprehend instructions written in English, (c) follow Western academic writing styles, identifying and interpreting unfamiliar images, sounds, and icons without confusion, (d) how to choose appropriate avatars, and (e) participate in an online collaboration discussion board with culturally appropriate cyber etiquette, to name a few (Ou, 2005).

Third, implementing collaboration in a homogenous group may not be an easy task, let alone implementing cross-cultural collaboration. Unlike the homogenous
single-culture collaborative group, in which participants may already share certain implicit commonalities as a foundation, individuals coming from cross-cultural backgrounds may need to learn to compromise with regard to differences among them, never an easy task. K. Smith and Berg (1997) indicated that during the process of cross-cultural collaboration, participants must determine how to handle constantly emerging challenges, addressing their differences as well as contributing respective strengths to the group. McLoughlin (1999) indicated that although cross-cultural groups are required to collaborate, they must also cope with challenges more efficiently and effectively than traditional groups; otherwise, the cohesiveness of cross-cultural collaboration soon falls apart. Besides, compared to conventional collaborative tasks, cross-cultural collaborative groups require concise guidelines and timely assistance to steer them through the process of collaborative learning (McLoughlin, 1999).

In *The Art of Happiness in a Troubled World*, His Holiness the Dalai Lama (2009b) and psychiatrist and cross-cultural researcher Cutler identified the most daunting task in terms of facilitating cross-cultural collaboration: establishing a sense of interconnectedness, a sense of community among members from cross-cultural backgrounds. Members from cross-cultural backgrounds need to know how to perceive others “as they are,” which means interacting with other members based on evidence-supported facts and mutual understandings instead of unsupported and distorted bias and stereotypes. To attain this goal, however, Cutler argued that individuals must equip themselves with certain techniques, for instance, coping strategies, such as exercising cognitive reappraisal techniques or perspective-taking, to deal with challenges that may
constantly emerge during the process of cross-cultural collaboration. In other words, participants must learn how to put themselves in other participants’ shoes in order to acknowledge certain difficulties or dilemmas that people from other cultural backgrounds may confront. Especially in the cross-cultural collaboration situation, Cutler (2009) stated that if groups can work toward a common goal, feeling dignity and equality, and during the process gradually establish mutual trust and understanding, then the sense of community among group members may emerge naturally. Nevertheless, the requirements and conditions noted here are by no means easy to meet and accomplish.

Fourth, compared to conventional collaborative groups, participants from cross-cultural backgrounds may need to respond to emerging challenges and control the situation more effectively and efficiently; consequently, they must equip themselves with a kind of awareness of the current situation, known as critical state recognition. According to Looije, Brake, and Nerincx (2004), critical state recognition is a collective mindset whereby a group of people from cross-cultural backgrounds are aware of the current situation and constantly reflect and assess the trade-off. When group members reach critical state recognition, they are able to implement effective assessment and take proper measures to respond to emerging challenges accordingly. To reach this goal, however, participants need to pay that price because they cognitive as well as affective burdens are extremely high. (Looije, Brake & Nerincx, 2004). Compared to traditional collaborative groups, their tasks become more complicated and demanding.

Fifth, to most people, the online cross-cultural collaborative setting may be an unfamiliar context. In *The Resiliency Advantage* Siebert (2005) indicated that learners
placed in the novice role must intentionally foster certain mentalities and exercise adequate coping strategies to keep themselves functioning well, such as autonomy, problem-focused coping strategies, tolerance of uncertainty, and an open mind. Siebert (2005) also pointed that online learning is the dynamic process, in which one must constantly strike a balance between interdependence and dependence; therefore, while collaborating with group members, one has to be a self-directed and self-reliant learner, capable of handling uncertainties and confusions with the mentality of resilience and perseverance; by the same token, the group member must transform this very mental resiliency into problem-focused mindset.

The argument above is supported by Vatrapu and Suthers (2007), who found that the ability to adapt to uncertainty and unpredictability in the cross-cultural collaborative learning process, often called a high tolerance of uncertainty by cross-cultural psychologists, is one of the prerequisites for successful collaborative learning. Researchers also indicated that confusion during the process of online collaboration may emerge; therefore, group members engaging in the online cross-cultural collaboration must negotiate with one another out of mutual respect and understanding instead of act out their differences. To do this, equipping themselves with a resiliency mentality and problem-solving techniques is crucial (Korpela, 1996; Sarda, 1990; K. Smith & Berg, 1997).

Sixth, in online cross-cultural collaborative learning settings, except for the requirement of participants’ mental readiness and toughness, various broader online learning cultural-contextual issues require attention as well. Vatrapu and Suthers (2007)
listed various cross-cultural issues that may impact online cross-cultural collaboration. According to them, cross-cultural factors, such as coming from a society characterized by individualism versus collectivism or avoidance of uncertainty versus tolerance of uncertainty, may significantly affect how participants perform in the collaborative learning setting. Specifically, they argued that participants coming from cultures where uncertainty is avoided may prefer concise learning guidance with clear objectives provided by instructors because they tend to respect and trust authority figures but not their peer group members. On the contrary, participants from societies in which tolerance for uncertainty is weak prefer autonomous as well as self-regulated learning; they enjoy the process of problem-solving on their own instead of seeking assistance from instructors (Vatrapu & Suthers, 2007).

Rutkowski, Vogel, Genuchten, Bemelmans, and Favier (2002) studied online cross-cultural communication in e-collaboration, indicating that participants from cross-cultural backgrounds cannot interact effectively and productively with one another until they can whole-heartedly trust and respect people from other cultural groups without sensing threats and disrespect: This process of adaptation takes participants’ willingness, time, and effort. They also found that the emerging sense of community interdependence, which may naturally be fostered among group members who reciprocally respect and trust one another, is a valid predictor of participants’ satisfactory level and a productive collaborative learning.

Finally, the way participants perceive the experience of online cross-cultural collaborative learning is crucial as well. Pincas (1998) indicated that to make
collaborative learning effective in a CMC environment, students may need to perceive it as productive and rewarding as the traditional face-to-face discussion taking place in their daily lives. Kwon (1998) asserted that compared to collaboration taking place in the traditional classroom setting, participants engaging in online collaboration generally lack opportunities or time to adapt themselves to the novelties of the online learning environment; therefore, they may perceive online collaborative learning as a threat or a compromise of traditional face-to-face learning.

In summary, based on the studies and literature illustrated above, one may infer that collaborative learning has well-established theoretical roots. It ensures a meaningful and rewarding learning process and is particularly suitable for operating problem-solving learning strategies (PBL); however, when members engaging in online collaborative learning process are from cross-cultural backgrounds, they must deal with complicated challenges.

Language-related challenges may be the most evident. Online participants from cross-cultural backgrounds may not have the privilege of communicating with one another in their native language, L1. Instead, they may need to adopt English, a language unfamiliar to them, as the major communication tool online. Consequently, they may be deprived of their ability to exercise inner speech may, thus affecting their performance in online collaboration. For instance, they may be limited in their choice of CMC, adopting only the asynchronous form as the major communication manner. They may lose the advantage of assistance from advanced learners’ cognitive scaffolding.
Beside language-related issues, other issues may also impact online cross-cultural collaborative learning: Challenges related to implementing cross-cultural collaborative strategies, cultivating participants’ mental readiness and conflict-solving strategies, and building a nonthreatening online learning environment must be addressed.

To make online cross-cultural collaborative learning a successful experience, all participants must equip themselves with certain skills and knowledge, such as English proficiency, collaborative techniques, and knowledge. They may also require some psychological traits, such mental resiliency, to steer themselves throughout the process. Researchers generally agree that with participants from cross-cultural settings speaking diverse language, the online cross-cultural collaborative learning experience itself may be a continual process of encountering and overcoming challenges.

Strategies or mentalities with which participants should equip themselves to overcome challenges in the online collaborative learning environment are the subject of the next section. Primary mentality and skills needed to deal with challenges—coping mechanisms—are elaborated below.

**Psychological Adjustment: Coping Mechanisms**

An article in the *New York Times* in 2009 claimed that people all over the world were living in a “coping year of uncertainty” (Tugend). During a recession and economic downtown, learning about how to cope with difficulties and transform challenges into opportunities cannot be overemphasized. Although studies on coping mechanisms in the field of psychology have been popular for decades and primarily applicable to professionals in helping capacities, rare cross-cultural psychologists, online learning
researchers, and educational psychologists have studied how one’s coping strategies may impact performance in learning, in particular in the environment of online learning with CMC (Bhagat & Allie, 1989).

**Categorizing Coping Strategies**

In general, coping is defined as individuals’ exercising mental efforts that help them manage, moderate, or regulate taxing circumstances (Dalai Lama & Ekman, 2008). Specifically, individuals practice coping mechanisms in order to handle stressful experiences, constantly emerging from the environment so that they can master, minimize, reduce, or tolerate the stress or conflict (Dalai Lama & Ekman, 2008; Folkman & Lazarus, 1980).

Conventionally, human coping mechanisms can be roughly divided into two categories: (a) problem-focused coping and (b) emotion-focused coping strategies (Dalai Lama & Ekman, 2008; Folkman & Lazarus, 1985). By actively discovering information and feasible solutions as well as learning new skills to manage problems, one adopts problem-focused coping strategies so as to deal with the causes leading to their problems. Problem-focused coping skills are goal-oriented, and the main focus of exercising problem-focused coping mechanisms is to solve the problem confronting an individual and to remove obstacles that deter her or him from reaching the goal. People employing problem-focused coping strategies are more likely to confront difficulties straightforwardly and instantly, seeking social and institutional supports and resources, and trying to solve problems to meet their own subjective needs. In a broader sense, problem-focused coping strategies also include boosting mental toughness or raising
willingness to persevere throughout the stressful situation; deliberating repressive competitive activities to focus on one thing at a time; practicing mindfulness, focus and concentration, information seeking acts; or regulating behavior as well as emotion to manage emotional distress (Folkman & Lazarus, 1980; Lazarus & Folkman, 1984; Lazarus & Launier, 1978).

By contrast, instead of channeling cognitive and mental energies into the problem-tackling process immediately—if participants cultivate a sense of mental readiness first, wait for an appropriate time, approach instead of deal with problems right away, focus on relationships and bonding, engage in personal feeling and emotion sharing, then they have employed emotion-focused coping mechanisms. In other words, instead of directly confronting problems, participants can primarily employ emotion-focused coping skills to help themselves “feel better” and obtain more psychological support from peers in order to gain mental strength or confidence to tackle challenges. As a result, strategies such as (a) emotion suppression (suppressing or disguising genuine emotion to earn support from peers), (b) optimistic comparison (“Someone always performs worse than I do”), and (c) lowered expectations are manifestations of adopting emotion-focused coping mechanism (Folkman & Lazarus, 1980; Lazarus & Folkman, 1984; Lazarus & Launier, 1978).

Arguably, some researchers has shown that people who prefer using emotion-focused coping strategies mechanisms may be more prone to “deterministic” philosophies, believing in the predetermined destiny or the dominating power or control imposed from an unknown Almighty who can decisively determine their fate (Dumont &
Praying and turning to religious activities for psychological comfort are categorized as emotion-focused coping strategies.

 Except for the popular categorization of problem-focused and emotion-focused coping, Olah (1995) categorized coping mechanisms in a more complicated way, identifying three categories: assimilation, accommodation, and avoidance. Assimilation entails exercising cognitive or behavioral attempts to change the environment or alter conditions to fit into the needs of the individual. Examples of assimilation may include (a) adopting problem-focused techniques, (b) showing a task-oriented mindset, (c) expressing assertive as well as information-seeking attitudes, (d) seeking supports for practical purposes, and (e) establishing interpersonal relationships to seek available resources.

 Accommodation occurs when an individual exercises cognitive and behavioral attempts in order to reappraise the situation at hand, making an effort to adapt oneself to fit in the environment. Examples of accommodation include (a) adopting emotion-focused techniques, (b) regulating or suppressing emotions to avoid confronting others in provocative situations, (c) exercising cognitive reappraisal skills so as to interpret the situation from different perspectives, and (d) seeking social supports for emotional comfort, such as giving in to peer pressures to earn acceptance from the group.

 Finally, so-called avoidance or withdrawal coping consists of deliberately exercising a withdrawing mindset or retreating behaviors so as to disengage oneself totally from the problem. Examples may include escape, behavioral or cognitive
disengagement, daydreaming, self-isolation, using alcohol or drugs excessively, and
deliberately forgetting.

**Activating Coping Strategies**

With regard to when and under what circumstances individuals activate coping
mechanism and what factors may decide their preferences for certain coping mechanisms
over others, researchers have found that when people perceive stressful situations, coping
mechanisms are automatically activated. Furthermore, people adopt problem-focused
coping strategies when they (a) perceive something constructive and productive can be
done, (b) exercise the internal locus of control, and (c) feel empowered to make some
positive changes to alter the unfavorable situation. In contrast, when people feel that
stressors are something predetermined or predestined and they can do little about them
but accept the adversity as predestined fate, they tend to adopt emotion-focused coping or
avoidance strategies (Folkman & Lazarus, 1980; Siegel & Schrimshaw, 2005).

Second, the activation of certain coping mechanism is related to cultural factors
(Olah, 1995); therefore, to some extent coping skills may be considered culturally
dependent and context-specific mechanisms. Olah (1995) argued that people tend to
adopt certain types of coping strategies because they had been taught to do so, learning to
perceive and interpret the perceived stressor in terms of their own cultural beliefs. How
people cope is not decided solely on the basis of will power, cognitive preference, or
psychological disposition; instead, their choice is also mediated by cultural values they
believe in and are part of. For instance, in the certain cultural context, if a majority of
family members’ recognition and acceptance is the criterion for assessing success, one is
more likely to adopt emotion-focused coping strategies, such as accommodation instead of assimilation as the major coping strategy because it is more culturally acceptable. Instead of confronting conventional social norms to alter unfavorable situations, one may instead choose to comply with social regulations for fear of causing conflicts.

Finally, gender factors may come into play in terms of people’s preferences for coping mechanisms. In addition, compared to females, males may be expected to adopt more aggressive and problem-focused coping strategies when confronting difficulties. On the contrary, females are encouraged to be more submissive, docile, and gentle. In many societies, males are encouraged to act up, regarded as major “problem-solvers.” By contrast, females are considered assisting mediators with emotional-focused and relationship-oriented mindsets (Vingerhoets, & Van Heck, 1990).

**Blurring the Boundaries of Coping Strategies**

Note that it is convenient and sometimes, even necessary, to separate human beings’ complicated coping mechanisms into two or three clear-cut categories, such as problem-focused versus emotion-focused; or assimilation, accommodation, and avoidance. Nevertheless, a researcher may run the risk of oversimplifying and failing to depict the genuine complexities of coping mechanisms. Besides, in the current study, sorting out people’s coping strategies solely based on mainstream Western psychology studies may be inappropriate because people from varied cultural backgrounds may manifest diversity in culturally-specific coping strategies that may not as yet have been well identified and studied by psychologists.
The following coping strategies serve as examples. Studies have indicated that the category of problem-focused coping strategies actually contains several subsets, some of which are psychological in nature as well as cognitively demanding, requiring individuals to exercise sophisticated mental skills to master them (Carver, Scheier, & Weintraub, 1989). Thus, people who seem not to speak up immediately but instead bury their heads in the problem to be solved as soon as they confront it may still adopt problem-focused coping strategies but at a more sophisticated level.

One typical example is to practice mental concentration, deliberately suppress distracting activities to focus on problems need to be solved, or delay gratification. While dealing with challenges, sometimes avoiding responding too hastily but practicing the mental concentration to suppress distracting activities, or delaying gratification, are necessary. It could make people put other unnecessary distractions aside, keeping themselves from being derailed by other non-impending events and concentrating on what they should do first based on priorities.

Another typical example is seeking emotional support. Seeking emotional support has been generally regarded as the implementation of emotion-focused coping strategies; however, doing so may be categorized as a problem-focused coping strategy (Carver et al., 1989). As one seeks social support for problem-solving causes, such as seeking advice, available resources and assistance, or valuable information related to the problem-solving itself, then it can be regarded as the problem-focused coping strategy. However, one may also seek social support for merely achieving emotional rapport, such as earning other’s sympathy and for the sake of “feeling good” but not necessarily
transform the emotional or psychological support into taking practical actions. Then, this could be classified as emotion-focused coping and may not be effective in terms of problem solving.

Actually, Siegel and Schrimshaw (2005) indicated that actively seeking emotional or social support could be functional and the manifestation of one’s mental resiliency if it could reduce a sense of insecurity and bolster confidence during a stressful situation. By contrast, on some occasions seeking sympathy from others may entail only the nonproductive venting of one’s negative emotions. Under this condition, one may become neurotic and addicted to endless nonproductive and recursive conversation with friends, however, never seeking out practical solutions. One study showed that even surrounded by friends, some teenage female students may be still prone to severe depression because females tend to seek emotional support for merely feeling good yet fail to transform the support into productive problem-solving actions. In such a circumstance, seeking emotional and social support may even be maladaptive and dysfunctional (Kershaw, 2008).

Finally, to deal with problems with a well thought out manner, sometimes one may need to practice the restraint coping by holding oneself back, suppressing irrational emotions, avoiding acting prematurely and practicing patience until an appropriate time is provided. Thus, the coping strategies illustrated above require the practitioner to strike a balance between problem-focused and emotion-focused coping skills, and it is not appropriate to categorize this sophisticated coping skill as merely problem-focused or emotion-focused because this type of complicated coping actually requires both.
In fact, the interpretation of coping strategies cannot be comprehensive if cultural factors are not considered. People living in individualist-oriented countries prefer and are encouraged to adopt more independence and risk-taking to explore the environment; whereas it may be more socially acceptable for people coming from collectivist cultures to adopt emotion-focused coping strategies because it is more socially and culturally acceptable to avoid recklessness and self-serving postures in dealing with challenges (Berman & Turk, 1981; Billings & Moos, 1984; Costanza, Derlega, & Winstead, 1988).

Maladaptive and Controversial Coping Strategies

Certain types of coping strategies are universally considered psychologically and physically unsound (maladaptive) and even harmful to mental well-being. For instance, (a) avoidance, (b) intentional mental disengagement, and (c) denial are typical examples of exercising psychologically and physically unsound coping strategies. These coping strategies are deemed maladaptive because people accustomed to adopting them cannot solve the problems they encounter but create consequential negative effects with them (Berman & Turk, 1981; Rinpoche, 2010; Siegel & Schrimshaw, 2005).

In the 21st century typical maladaptive coping strategies, such as avoidance and mental disengagement, may be best represented by Internet addiction (IA). O’Reilly (1996) and Young (1998) stated that students with depression and low self-efficacy in learning are more likely to bury themselves in online games or Internet conversations for days to relieve stress. They also show severe symptoms of behavioral as well as mental disengagement, withdrawing from real social lives and learning activities. Under the influence of this maladaptive coping mechanism, one reduces efforts to deal with the real
stressor, giving up the attempts to attain goals; consequently, they are incapable of dealing with emerging challenges. To make things worse, behavioral and mental disengagement may eventually turn into learned helplessness, a well-recognized notion proposed by the psychologist Martin Seligman; it eventually leads to total withdrawal from any productive activity (Miller & Norman, 1979). Avoidance, mental disengagement, learned helplessness, and the lack of mental resiliency are interconnected; eventually, leading a static and fruitless life is the consequence. Studies have shown that maladaptive coping strategies in the long run seriously impede psychological well-being (Aldwin & Revenson, 1987; Billings & Moos, 1984; Rinpoche, 2010; Wills, 1986).

Certain coping strategies, however, are controversial for the probable impact they may have on psychological wellness but are not detrimental. These coping strategies are also culturally specific and context-dependent. For instance, denial is a sophisticated construct that researchers define as the refusal to believe that the stressor exists or the attempt to act as if the stressor were not real (Carver et al., 1989). Some psychologists have suggested that denial is a useful, natural response that could minimize the psychological impact adversity brings to people and thereby facilitate problem-focused coping (Hauser & Bowld, 1990). Nevertheless, other psychologists have argued that denial brings no advantage but creates more serious problems because people may lose the precious opportunity to tackle difficulties as soon as possible. For instance, denying an unpleasant reality, such as a beloved person’s death may initially bring temporal comfort; however, in the long run, denying the truth only exacerbates the situation (Matthews, Siegel, Kuller, Thompson, & Varat, 1983).
In contrast with denial, acceptance occurs when one manages to accept a stressful situation without striving to alter the situation but learn to see it in a different light (Carver et al., 1989). Acceptance can be either positive or negative. Oliver and Brough (2002) proposed that acceptance allows people to perceive and interpret incidents in ways that determine how positively or negatively they accept the facts instead of to perceive what the situation really is. Practicing positive acceptance, people perceive the reality in an undistorted manner, and they are fully mindful of the situation they are currently in and manage to cope with challenges based on the resources available; therefore, positive acceptance is action-oriented and problem-focused. In contrast, acceptance is negative if it leads to avoidance or mental disengagement (Oliver & Brough, 2002). For instance, by accepting unchangeable fate, such as a socioeconomically deprived family background or intellectual inferiority, low-achieving students may give up too easily without making any further effort.

Finally, turning to religion for psychological comfort and social support is a controversial and culturally sensitive construct of coping as well. McCrae and Costa (1986) suggested that seeking religious comfort may be an extremely important coping strategy for people living in certain cultures and societies. Belavich (1995) indicated that one may experience spiritual growth and social support and find useful resources by participating in religious activities; on the contrary, withdrawing oneself into religion on purpose may cause degeneration into avoidance, leading to depression because of a deprivation of opportunities to earn social interaction and peer support. Overall, issues
related to the effectiveness and influence of religion-oriented coping strategies have rarely been studied and should be addressed further.

**Coping: Dispositional or Situational**

Whether or not coping strategy is a dispositional or situational trait is debatable. One’s coping strategy may be stable, innate, and embedded within the personality; if so, it is called *dispositional*. If it is a fluctuating mental mechanism, it is called *situational*, constantly changing across different situations.

Folkman and Lazarus (1985, 1988) and Folkman, Lazarus, Dunkel-Schetter, DeLongis, and Gruen (1986) claimed that coping should be viewed as a dynamic and interactive process between the personality and the situation confronted. As a result, coping could be regarded as a situational trait, and coping strategies may vary across different stressful transactions. These researchers also proposed that one learns to adjust oneself to the novice situation; therefore, one’s personality or disposition was unlikely to be a reliable predictor to estimate how one may cope with difficulties (Folkman & Lazarus, 1988).

Nevertheless, some researchers proposed that one’s coping preference is a dispositional trait, which is relatively stable across situations and not be easily altered even with age and physiological maturation (Carver, Scheier, & Weintraub, 1989). They argued that although people from time to time cope and react differently in various situations, in the long run they prefer returning to baseline, the comfort zone of their coping mechanisms to deal with challenges. How people cope is thus a trait embedded in the innate personality, and it may not be easily altered across situations. Psychologists
like Connor-Smith and Celeste (2007) indicated that the personality is a very reliable predictor of preferences for certain types of coping strategies, and ethnic groups differ in their selection of these strategies.

Except for the dispositional versus situational comparison, current studies on coping strategies could also be sorted into two major categories: (a) intraindividual and (b) interindividual. The former explores how the same group of people copes with difficulties while getting through different situations; the latter, however, examines how different groups of people react when facing the same situation (Magnusson & Torestad, 1993; Parker & Endler, 1992).

Researchers have gradually left the duality of the argument between dispositional and situational, or problem-focused and emotion-focused, coping behind and turned to studying what factors contribute to what type of coping strategies and to what extents (Ayers, Sandler, West, & Roosa, 1996). For instance, researchers like Bouchard, Guillemette, and Landry-Léger (2004) have indicated that people’s personalities shared as much variance with situational as with dispositional coping. People tend to see things in different lights, often exercising cognitive appraisals, and are prone to change their coping strategies accordingly in response to various situations; however, for people who have suffered from psychological disorders, such as neurosis, their coping strategies remained fixated, and they were more prone to maintain the same ineffective coping strategies.

Unfortunately, studies on how people in cross-cultural collaborative learning settings cope with emerging challenges and on whether their coping strategies remain the
same or change with the progress of online collaborative learning are sparse. The intent of the researcher of the current study was to address these issues further based on literature explicated above.

**Implications of Coping in the Educational Setting**

Every learning situation may potentially present unpredictable challenges and innate difficulties, and this may be true of online cross-cultural collaborative learning setting (Veermans & Jarvela, 2004). Sawhney (2002) indicated that although a technologically sophisticated collaborative learning environment could provide support for online learners, facilitating learners’ interactive construction of knowledge, complicated challenges in such a productive learning environment are unavoidable and evident. For instance, setting up a group’s learning goals, solving potential conflicts among group members, monitoring learners’ progress and activities, and assessing performance fairly could place demands on online learning instructors and learners. Furthermore, online collaborative interaction among learners may be difficult to initiate or sustain because learners may easily withdraw with no serious consequences (Dellarocas, 2003).

To deal with challenges effectively, both instructors and learners need to exercise coping strategies, and most of the time, the way they interpret and respond to the online situation leads to their choice of coping strategies. For instance, Veermans and Jarvela (2004) showed that students with learning goals are more likely to overcome off-task distractions and exhibit strongly task-oriented and problem-focused coping modes. In addition, they are more involved in inquiry and interactive learning processes. On the
contrary, students who lack clear learning goals experience two kinds of consequences. Those who have difficulty engaging in learning tasks tend to show regressive behaviors and denial, especially when the teacher does not provide clear guidance and offer constant encouragement and feedback. However, when authentic, meaningful learning tasks or problem-based learning is provided, learners may increase task-engagement behaviors. This result has been confirmed by Ainley, Hidi, and Berndoff (2002), who argued that authentic and meaningful learning tasks, such as problem-based learning, evoke more task-oriented coping modes and sustain learners’ learning engagement.

Instructors’ providing timely assistance and moderate monitoring are crucial for facilitating learning and encouraging problem-focused coping strategies as well. Especially in the initial phase of learning, instructors may need to provide concrete guidance or examples for students to follow so that students with various cognitive and socioemotional skills can fit into learning environments soon and smoothly (Brophy, 2004). Hickey, Moore, and Pellegrino (2001) argued that as teachers provide motivational scaffolding, off-task students could resume their learning, return to a more productive process and become focused on task-oriented activities. In addition, providing authentic problem-solving assignments and a technology-enriched learning environment could facilitate students’ engagement in problem solving and task-oriented learning.

To sum up, as shown in the literature highlighted above, if learners can exercise problem-focused coping strategies in the education setting and receive authentic and meaningful tasks and assistance from instructors, they can cope with challenges
effectively and engage in productive learning. Furthermore, whatever situations they encounter, persevering learners adjust themselves into the task and goal-oriented mode, refusing to give up learning tasks easily.

**Coping Strategies Interpreted in a Cultural Context**

A construct based on an ancient tradition in Eastern psychology, specifically Buddhist psychology, is useful in interpreting coping mechanisms fairly and comprehensively in specific cultural contexts. In the current study, Buddhist psychology is especially applicable to online collaborative learning behaviors of participants from the Eastern cultural framework.

Unlike in Western psychology, where identifying, labeling, and treating psychological disorders is key, maintaining one’s psychological well-being is the primary concern in the Eastern psychological tradition (Dalai Lama & Cutler, 2009a). Among all mind-discipline strategies taught by Buddha, learning psychologically sound coping strategies is essential in the tradition of Buddhist psychology.

Facing coping challenges is important in Eastern cultural tradition. According to Buddha, life itself is a process constantly changing. Encountering aging, sickness, separation, death, gain, loss, and numerous difficult choices, people feel confused by the fluctuating, unpredictable, and imperfect nature of life. To the Eastern mind, life is a process full of suffering, imperfection, and depression; however, according to Buddhist psychology life itself is not full of suffering; instead, life is suffering only when people choose to see and perceive it as such (Dalai Lama & Cutler, 2009b).
Surely, promulgating this philosophy is easier than practicing it. Mentally undisciplined people are incapable of leading lives of mental calm and rejoicing without feeling the sufferings of everyday life. Thus, proponents of Eastern psychology are more interested in living with mental calm than in removing suffering. Based on Buddha’s teaching, life is innately imperfect as a result of constant change and impermanence, so people must recognize, accept, and believe this truth. In other words, only an awareness and acceptance of the world as it really is—imperfect—can people activate positive coping strategies to deal with the challenges they confront. Equipped with this very awareness toward life, people could fully accept anything happening in the course of their lives with courage and confidence. This very mental resiliency is the top priority in activating problem-focused coping strategies (Dalai Lama & Cutler, 2009a).

As a result, seeming disengagement or avoidance by people from Eastern cultures may require careful interpretation because in certain cultural contexts, they may be encouraged to exercise disengagement as a prerequisite for solving difficult problems. Doing so enhances mental readiness to implement direct and active coping strategies, such as problem-focused coping strategies. For instance, practitioners in temples may engage in static cross-legged mindful mediation, doing nothing but merely reciting mantras and making prostrations, which may be regarded as denial or mental or behavioral withdrawal if observed only superficially. Nevertheless, these practitioners actually carry out analytical capabilities and channel mental energy, striving to foster insight to deal with difficult situations with comprehensive wisdom (Dalai Lama & Cutler, 2009a; Rinpoche, 2010). In the practice of mindfulness, emerging problems are
concentrated, analyzed, and revalued in the practitioner’s mind; individuals are encouraged to visualize difficulties in a vivid, stable, and detailed manner. Then, concentration is applied to conduct cognitive reappraisal, which aims to analyze the situation in a holistic and comprehensive manner, namely, taking other perspectives. This construct resembles cognitive reappraisal techniques widely adopted in psychology. Rinpoche (2010) indicated that mind-stabilization is a traditional mind-discipline in the Eastern cultural framework. As a result, the traditional Eastern coping paradigm, such as dealing with challenges by taking steps accordingly in the proper context, right timing, and focused cognitive and mental preparation may be categorized as a culturally specific and a psychologically sound one.

Finally, insights derive from the Eastern cultural tradition in terms of the controversial categorization of coping strategies. In fact, according to Rinpoche (2010), coping could be both situational and dispositional; however, what coping is, whether situational or dispositional, may not be the primary issue researchers should argue. Human beings have innate and fixed psychological dispositions difficult to transform, and coping preference is one of them. Sometimes, having a relatively fixed coping strategy may even be advantageous as well as necessary because exercising identical coping strategies to respond to similar challenges is efficient in terms of both time and effort.

Nevertheless, reluctant to change and trapped in the habituation of the same fixed coping strategy, people run the risk of losing insight and the ability to solve problems effectively; therefore, with mental discipline they can analyze difficulties with
undistorted rational thought, see situations in a different and positive light, then respond to challenges accordingly with nonself-centered attitudes that yield effective exercise of certain coping strategies.

According to Eastern tradition, coping serves a practical purpose. It can be both dispositional and situational as soon as it helps practitioners deal with difficulties (Rinpoche, 2010). In addition, coping is considered most effective if people are equipped with unselfish nonself-centered mindsets to cope with challenges voluntarily for the sake of others. People acquire more mental resiliency, perseverance, and strength in handling challenges when they abandon self-centered concerns or egocentric attitudes and transform these attitudes into more compassionate concerns.

The Dalai Lama and Ekman (2008) indicated that people who willingly act for the sake of others enjoy a higher level of satisfaction than those who respond merely for themselves. In addition, people can increase their sense of empowerment if they regard challenges as truly meaningful and cope with them out of compassion. A good example is a dedicated professor preparing to teach students. Even if the process of preparation is tiresome and tedious, the professor may still enjoy the whole process.

**Coping, Cultural Intelligence, and Acculturation**

Acculturation has been the key construct discussed and studied by cross-cultural researchers for decades; however, the connection between acculturation and online cross-cultural collaborative learning requires analysis. In fact, from a broader perspective, acculturation could be regarded as the gradual psychologically and behaviorally adaptive process of efforts to adjust to the novice context, culture, and
society (Kottak, 2005). Sodowsky and Plake (1992) indicated that from the psychological viewpoint, acculturation can be regarded as an adjusting process in which people exercise certain coping mechanisms to balance psychological trade-offs and remove stressors. In a way, the collaborative learning setting could be perceived as a novice environment full of unpredictable challenges to cross-cultural group members; the adjustment process participants go through, striving to fit in, is acculturation. Whether it takes place in a conventional educational setting or online learning environment, it may be a psychologically demanding and stressful process for participants. Similar to its role in learning, coping may be equally important in terms of acculturating into the cross-cultural collaborative learning setting.

Following this line of thinking, Suinn, Khoo and Ahuna (1995) proposed three types of acculturation that pertain to the coping mechanisms. Similar to categories of coping, three types of acculturation are (a) assimilation, (b) withdraw or resistance, and (c) biculturalism. Several factors enhancing acculturation have been identified, and these factors can be synthesized as follows: (a) The more competent the L2 (host) language skill, the higher the acculturation level gained; (b) identifying with the values, behaviors, customs and manners, philosophies, and habits of the novice culture yields higher acculturation levels and less identity confusion; (c) the more stubbornly people resist change and maintain their own cultural, ethnic, and racial identity, the lower the acculturation level they may achieve; and (d) the more proficient host culture knowledge they equip themselves with, the more competent they will be in dealing with cross-cultural challenges. Maladaptive-acculturated people are very likely to withdraw from
the novice context (Noh & Kaspar, 2003; Shin & Brown, 2000; Swagler & Ellis, 2003; Zheng & Berry, 1991). Research has also indicated that the level of acculturation of international graduate students is a reliable and statistically significant predictor of their cross-cultural transition, especially how well they may perform in the host culture academically and socially (Crano & Crano, 1993).

**Contribution of Cultural Intelligence and Coping to Acculturation**

Cross-cultural psychology researchers Ang and Van Dyne (2008) proposed an innovative psychological construct they called the cultural intelligence quotient (CQ), or cultural intelligence (CI). According to Earley and Ang (2003), CQ is a multidimensional aspect of intelligence that includes three components: (a) mental (metacognitive and cognitive), (b) motivational, and (c) behavioral. It is defined as “one’s capabilities to deal effectively in situations characterized by cultural diversity and psychological willingness to acculturate oneself into the foreign/host culture environment” (Ang & Van Dyne, 2008). In their study, they associated CQ with the popular Big-5 measurement, which is a well-developed and reliable personality-measurement inventory, universally adopted by helping professionals. They discovered that in the Big Five, openness to novice experiences is strongly related to CQ in all components (metacognitive, cognitive, motivational, and behavioral). In addition, high level of self-efficacy positively correlates to extraversion in the Big Five personality inventory, which identifies people who adopt problem-focused coping strategies instead of withdrawal or avoidance (Appelhans & Schmeck, 2002). In a separate but CQ-related study in which foreign professors were the subjects, Templer, Tay, and Chandrasekar (2006) found that CQ is an
accurate predictor of cross-cultural adjustments and effective acculturation. CQ assesses not only the extent to which people equip themselves with the cultural knowledge of the host culture but also what behaviors people may adopt to respond to the context of the host culture. Ideally, people with high cultural intelligence (CQ) not only know the host culture better, but they are also more likely to fit into the host culture by coping with challenges and showing less tendency toward avoidance or disengagement (Ang & Van Dyne, 2008).

In summary, if online learners (a) can equip themselves with a certain level of cultural knowledge on the novice situation, or know-what, with open-minded attitudes and mental resiliency during the process of acculturation, and (b) willingly exercise practical problem-focused coping strategies, or know-how, to confront and deal with emerging challenges, then they are highly likely to acculturate themselves into the novice online cross-cultural collaborative learning situation and thrive. A well-acculturated online cross-cultural collaborative learning group can be expected to perform productively and competently. Most psychologists have agreed that adopting problem-focused coping strategies may be psychologically beneficial in terms of enhancing and maintaining people’s mental health and psychological-wellness (Folkman & Lazarus, 1980; Lazarus & Folkman, 1984; Lazarus & Launier, 1978; Menaghan, & Merves, 1984). In terms of acculturation, compared to avoidance or disengagement, exercising problem-focused coping strategies accompanied by high cultural intelligence is beneficial to people who strive to acculturate themselves into the host culture or novice context, a concept still true if viewed from the non-Western perspective (Rinpoche, 2010).
Developing Effective Practices for Online Cross-cultural Collaborative Learning

In this chapter the researcher illustrated and elaborated concepts and issues related to online cross-cultural collaborative learning. First, the differences between two concepts—collaboration and cooperation—were explained to show that the collaboration mode may be more suitable than cooperation for implementing online learning because of its solid theoretical roots and epistemological implications, extending back to Gestalt psychology, Piaget’s cognitive, and Vygotky’s socialcultural development theory.

Second, the researcher argued that problem-based learning (PBL) and collaborative learning may be the best match in terms of instructional strategies because if provided with authentic, real-life scenarios or vignettes as problems, learners placed in the collaborative learning environment can exercise the true spirit of constructivist learning. This is so because during the process of collaboration, in order to solve problems, participants must learn to be independent, self-directed, and autonomous. In the online learning environment full of uncertainties, they must be opened-minded to interact with other members and figure out commonly shared, feasible solutions. If necessary, they may receive the assistance of advanced learners through cognitive and emotional scaffolding to enhance cognitive growth leading to learners’ higher-order critical thinking.

Nevertheless, especially in the online cross-cultural collaborative learning setting, language (English) issues could be detrimental and crucial to the performance of cross-cultural online learners (Chase, Macfadyen, Reeder & Roche, 2002). English- (ESL) and second-language acquisition (SLA) issues must be addressed further because currently, in
the online learning setting, English is the universally adopted communication tool among participants. While communicating and interacting with one another online, participants from cross-cultural backgrounds may not enjoy the privileges of sharing familiar cultural norms or speaking the same language to communicate with one another. Especially to ESL participants who may not have yet mastered English, constantly emerging language-related challenges may hamper their performance, pace of progress, and levels of satisfaction with online collaborative learning.

Challenges related to SLA could be elaborated further if viewed from the perspective of psycholinguistics. The formation of inner speech, or private speech, carried primarily by competently exercising the mother tongue, L1, is a cognitive prerequisite for establishing proficient L2 and mature cognitive as well as psychological development. How proficiently ESL participants can exercise L1 inner speech, in turn, determines their communication patterns and behaviors in the online learning setting. As cross-cultural participants adopt synchronous or asynchronous forms of CMC to collaborate with one another in English, they may confront a variety of unpredictable situations and challenges.

For instance, because the synchronous form of communication requires participants to receive and respond instantly to perceived information in English, ESL participants may be deprived of reflection time needed to exercise inner speech to convey their thoughts in English. Consequently, their premature withdrawal and avoidance manifests as reticence or disengagement in learning. By contrast, asynchronous communication may be a more appropriate CMC because it provides ESL participants
with sufficient time to reflect on and form their thoughts in English, conveying them in a grammatically correct and semantically appropriate manner. Implementing asynchronous communication may be preferable for online cross-cultural collaborative learning, but writing and typing are still not carefree. Numerous studies have indicated that as people switch to L2, their cognitive strength, psychological wellness, and cognitive as well as emotional scaffolding are all weakened and compromised.

As a result, no matter whether collaborative learning takes place in the traditional setting or the online learning environment, learning itself may bring certain unpredictable challenges and pressures to learners; furthermore, learners may come from different cultural backgrounds and speak diverse languages. Thus, learning how to exercise coping strategies to deal with emerging challenges is crucial.

In general, psychologists have categorized people’s coping strategies into two major categories: problem-focused and emotion-focused. When adopting the problem-focused coping strategy, the individual strives to avoid unnecessary distractions, channeling cognitive effort and mental powers into the problem to be solved with mental resiliency and perseverance. During the process, constantly seeking available supportive resources, including professional knowledge or social support, may help the individual overcome difficulties. Most psychologists agree that adopting problem-focused coping can be the most beneficial to psychological well-being and effective in terms of dealing with problems.

Arbitrarily sorting coping strategies into certain fixed and independent categories may not be appropriate; most important of all, while trying to address the complex
construct of coping in the context of cross-cultural online collaborative learning, cultural factors should be taken into serious consideration. For instance, when comprehensively depicting and interpreting coping strategies preferred by participants from non-Western cultural backgrounds, recognizing that cultural traditions, faiths, and beliefs lead to exercising certain coping strategies is essential.

Other than coping, various cultural factors, such as level of acculturation, also play important roles in understanding the genuine phenomena involved in online cross-cultural collaborative learning. Acculturation can be viewed as a process of psychological adjustment, that is, willingness to immerse into the novice environment (host culture). Consequently, understanding the coping mechanisms operating behind acculturation is important because the online collaborative learning setting can be deemed the novice (the host society) environment in which participants from different cultural backgrounds must learn how to cope with challenges and then adjust themselves to fit in, acculturating themselves into the CMC environment as effectively as possible.

A person with a high level of acculturation identifies with values embedded in the host culture and shows flexibility and openness to engage in and interact with people and novelties of the host culture. Such a learner may hence enjoy more psychological well-being and can perhaps function well in the host culture.

Confronting emerging challenges in the novice context, people want to acculturate themselves to fit in; and to do so requires coping. To cope persistently without giving up, they must equip themselves with certain practical strategies, knowledge, and drive, which are all included in the newly developing construct—cultural intelligence. Although
constructs as such are still developing, preliminary research has shown that people possessing higher levels of cultural intelligence are more open-minded, extroverted, and flexible. Compared to their peers who may cling to the values of their own native culture, they are more likely to exercise appropriate coping skills, such as problem-focused coping accordingly based on the specific contexts in which they are situated. They are also independent, autonomous, and self-directed, crucial features leading to productive online cross-cultural collaborative learning.

The author of the current study, an international as well as online learning researcher, has concluded that studies on this promising research field are still unsatisfactory and insufficient. The foregoing section addressed issues related to cross-cultural online collaborative learning, including collaboration, coping mechanisms, cultural intelligence, and the effect of varying English language proficiencies on performance in an online cross-cultural collaborative learning environment. Even with attention to these factors, elements of the complete picture of online cross-cultural collaborative learning are still missing. Addressing the following themes may retrieve these missing pieces.

**Five Themes**

In this current research, the researcher has aimed at a genuine, holistic picture of online cross-cultural collaborative learning by addressing the following five themes.

The first theme regards overall challenges. Online cross-cultural collaborative learning brings challenges and difficulties to participants. What specific challenges and difficulties may participants from cross-cultural backgrounds encounter? Furthermore,
especially for ESL learners or nonnative speakers of English, what challenges are most threatening and imminent, and what may be major factors contributing to these challenges?

The second theme relates to language-related issues. Because cross-cultural group members may have to use English instead of their native language to communicate with one another, what role does language, both verbal and nonverbal, play in the online cross-cultural collaborative learning environment? How much of an influence does the language factor cast on the online collaborative learning process, and what advantages and disadvantages are associated with cross-cultural group members’ adopting English to communicate with one another?

The third theme deals with issues relating to overall coping mechanisms. Because online collaborative learning may be challenging to cross-cultural group members, how do they perceive and then respond to various challenges embedded in online collaborative learning? With what types of coping strategies do they manage and respond to emerging challenges? What contributes to differences and similarities in terms of the use of coping strategies? Finally, as online collaborative learning progresses, do their coping strategies change or remain the same?

The fourth theme relates to various cultural factors. Because cross-cultural and multinational groups may need to collaborate with one another online and learn to acculturate themselves into the novice online learning context, to what extent do cultural factors affect online learning performance? If equipped with certain cultural knowledge and awareness, could participants perform more productively?
The final theme was designed to identify and elaborate overall factors contributing to the success or failure of online cross-cultural collaborative learning.

The ultimate goal of the current research was not to demonstrate or exaggerate how incompatible people from different cultures may be while they interact with one another during the process of online cross-cultural collaboration; instead, the purpose was to remove bias and misunderstanding and to discover tangible and appropriate means to enhance (a) problem-solving capabilities, (b) effectiveness in coping with challenges, (c) mutual understanding and support, and (d) productive online collaborative learning experiences among people from different cultures.

Clearly, know-how is much important than know-what in terms of cross-cultural research. Merely illustrating differences and challenges with regard to cross-cultural online learning may not be beneficial to prospective learners and instructors. In fact, depicting the genuine phenomenon, providing appropriate theoretical explanations, and building feasible guidelines as well as practical suggestions for online learning instructors and participants taking part in cross-cultural collaborative learning in the future were the goals of the researcher in this project.
CHAPTER III: METHODOLOGY

Theoretical Framework: Grounded Theory and Mixed Design

Research Methodology: Grounded Theory (GT)

In the current study, I adopted grounded theory (GT), proposed by Glaser (1992), as the major research methodology and followed the epistemology and theoretical assumptions embedded in GT with regard to data analysis. In this chapter I have explained why I adopted GT, one of the most powerful research methodologies in the qualitative research paradigm, and how the data collected in this current study were analyzed and interpreted.

From the empiricist’s perspective, epistemologically speaking, the truth embedded within or operating behind observable phenomena is unique as well as universal and therefore should be identical everywhere (Hayward & Varela, 2002). As a result, the truth, if discovered, should be replicable by different researchers and verified across different situations. In a rigorous empirical study following the empirical research paradigm, the researcher is required to keep an objective and neutral stance throughout the research. In particular, the researcher should play a role as an objective and bias-free observer, trying not to intervene or manipulate any variables or phenomenon emerging during the process of study but instead faithfully registering them. Furthermore, the researcher should also present the research outcomes without adding any personal opinion or comments (Hayward & Varela, 2001). In a sense, one of the ultimate purposes of conducting empiricist studies is to apply results obtained from one study to others
across different contexts; in other words results acquired can be generalized across various situations with reliability and validity.

In contrast to the conventional empirical research paradigm described above, the research methodology adopted in the current study was based on grounded theory. In recent years, especially in the domain of social science, several emerging innovative research methodologies have been applied to question epistemological assumptions in empirical research, including validity, reliability, and even generalizability of results (Hayward & Varela, 2001). To avoid the trap of the seemingly endless debate over validity and reliability in certain competing research paradigms, such as quantitative and qualitative research, Strauss and Corbin (1997) asserted the need to establish a research methodology that integrates and manifests the advantages but reduces the disadvantages of both. Consequently, GT has been regarded as a major branch of the qualitative research paradigm for decades; in fact, its reliability and validity have convinced many researchers, winning over opponents, especially those from the quantitative research domain (Glaser 1992).

Several factors contribute to the unique role GT methodology plays in bridging the gap between the quantitative and qualitative research paradigms. First, methodologically speaking, unlike conventional empirical research, the main purpose of GT research methodology is not to test hypotheses to verify the researcher’s assumptions, which are conventionally drawn from extant theories. On the contrary, the purposes of GT research methodology are to discover repeatedly emerging patterns and themes in unexplored, scattered, and novice datasets, then consolidate them as interconnected
categories, and eventually generate and establish a theoretical framework, aiming to interpret certain unexplored phenomena. Therefore, to explore unexplored research territory and to produce a pilot or preliminary study are the main reasons to adopt GT research methodology (Charmaz, 2006; Glaser, 1992; Strauss & Corbin, 1997).

Second, epistemologically speaking, the GT researcher believes that truth comprises multiple layers, which are projected and created from each person’s perspectives and realities; therefore, truth is essentially a mental construct, collectively built by each human being’s mental projections and interpretations of contexts. For instance, even when people are placed in the same context and experience the same historical or political events, their interpretations may still vary because of the implicit influence of the cultural, socioeconomic, and environmental contexts with which they are familiar (Charmaz, 2006; Hayward & Varela, 2002; Heffernan, 2011). Under this very epistemological belief, GT researchers have argued that the boundary between the researcher and the phenomena to be studied is hence, reciprocal, interactive, and flexible. Therefore, blurring boundaries as well as drawing a less rigid line between researcher (the knower) and participants (people to be known) becomes meaningful.

Third, based on the epistemological belief noted above, GT researchers have their own beliefs about the process of data interpretation. Unlike conventional research methodology in which the researcher must follow a rigorous data analysis procedure, trimming irrelevant numeric datasets as outliers and keeping those fitted to form the hypotheses for testing, GT researchers emphasize the belief that all data should be embraced; certainly, they include both quantitative and qualitative data. In fact, one of
the notable dictums proposed by GT founder Glaser (1992) is that all is data. Virtually everything that gets in the researcher’s way when studying a certain area is considered data. GT researchers deem any dataset, no matter whether it is acquired from participants or the researcher or presented objectively or subjectively, as a valuable resource that may lead researchers to depict the phenomena, adding to a holistic understanding of reality. Because GT researchers have argued that reality usually comprises multiple layers of truth, usually perceived as well as interpreted differently, depending on people and occasions, the truth cannot be fairly depicted unless the researcher’s interpretation or comments on it are also counted as part of the research (Charmaz, 2006). Following the dictum of reality as multilayered truth, the GT researcher is legitimately allowed to add his or her own interpretations to the dataset, also known as establishing theoretical memos, and integrate these data into the data analysis process without jeopardizing the objectivity of the study (Charmaz, 2006).

Fourth, the belief that the perceptions and interpretations of both the participants as well as the researcher should be regarded as part of the collective knowledge constructs of the particular reality generates another notable feature of GT: The GT researcher is not a voiceless but an active participant throughout the study. Instead of playing the reticent and detached observer as most empirical researchers do, GT researchers enjoy the privilege of interacting with data by adopting a reflective and interpretive research position. To draw an analogy, GT researchers regard themselves as channels through which participants’ voices can freely flow without being reduced and altered to fit into predetermined hypotheses (Charmaz, 2006). The GT researcher’s task
is, therefore, to provide an unobstructed channel, striving to keep information flowing through it without hindrance or manipulation. To make this happen, one of the unconventional strategies the GT researcher usually adopts is to keep himself or herself actively engaged with participants.

For example, during the process of analyzing data, GT researchers may continually discuss research findings with participants, presenting theoretical memos or forming focus groups to ask for participants’ further clarification and verification on certain issues (Clandinin & Connelly, 2000). GT researchers believe that although researchers and participants collectively verify and exchange opinions about the dataset, the validity and reliability of the research are assured, empowering participants and ensuring that their voices and behavioral patterns are correctly depicted and presented without the influence of the researchers’ self-serving bias and arbitrary interpretations (Glaser, 1992).

Similar to Gestalt psychologists, GT researchers believe the larger context can be regarded as Gestalt, which comprises an ever-changing flow of fluctuating consciousness, including individuals’ interpretations and opinions on incidents. Gestalt can be best comprehended only from the process of reciprocal interaction among individuals and contexts. Heshusius (1994) and Hayward and Varela (2002) respectively pointed out that, viewed from the epistemological as well as ontological perspectives, knowledge and truth may not be so observer-independent as most empiricists commonly assume. In contrast, constructivists have indicated that reality is not independent from the people who live in it; in fact, it is a collectively constructed entity that participants as well as researchers
share in establishing. Therefore, truth is unlikely to be fairly and correctly depicted if some people’s presence, including that of researchers, is purposely excluded.

Fifth, similar to most empirical researchers, GT researchers also pay attention to generalizability, hoping they can apply their research results in similar situations to maintain reliability. Thus, while conducting research, GT researchers strive to take a thin slice of reality as the theoretical sample. This thin-sliced sampling process is called theoretical sampling by GT researchers; its purpose is to represent people in situations similar to that of the researcher. This may explain why GT researchers are encouraged to conduct action research (Teram, Schachter, & Stalker, 2005) and why they prefer tackling research problems related to situations they currently confront instead of hypothetical ones (Strauss & Corbin, 1997). Doing so, GT researchers can not only depict phenomena objectively but, most important of all, interpret and elaborate phenomena from a more empathetic angle, based on their own deeper understanding and interpretation of the reality in which they are also placed. The researcher’s genuine motivations, feelings, compassions, and deeper understandings imbedded within the context can be induced, depicted, and delivered through the researcher to the public, tremendously empowering GT research in terms of exploring and interpreting the phenomena to be studied. Only in this way can a researcher possibly depict the authenticity of a complicated phenomenon in a comprehensive and holistic manner and grasp the Gestalt of the reality (Strauss & Corbin, 1997).

Finally, in an article on research paradigms, Hayward (2001) argued that compared to traditional empirical studies, those adopting this innovative research stance
are equally valid and reliable. He indicated that in general, outcomes from empirical studies may be considered reproducible and generalizable across situations. Nevertheless, especially in the social studies domain, although the researcher aims to depict and interpret human beings’ complex behaviors and patterns, both the commonness and uniqueness of human beings should be equally weighted by the researcher. The commonness can surely offer guideline-like instructions that can be followed and employed to respond to similar situations; the uniqueness can provide deeper insight to certain cases because of its extraordinariness.

Specifically, Hayward (2001) argued that in the social science domain, to understand and gain deeper insights into subjects to be studied, often merely administering psychometric tests on them may be necessary but insufficient. How subjects personally feel about certain incidents occurring in their lives; how they relate, react to, and handle incidents; and what psychological impacts these incidents may have on subjects, just to name a few, may not be correctly depicted through snapshot quantitative data collection. Based on his argument, participants’ narrative accounts, reflecting their deeper feelings toward certain incidents, and participants’ genuine behavioral patterns, observed and depicted only through researchers’ longitudinal interaction with them, should be taken into account as well. How an online learning researcher or psychologist can fairly and correctly comprehend and interpret online learners’ mindsets as well as patterns of online learning behaviors if he or she has never taken part in an online learning course in person is problematic.
In fact, this constructivist GT research methodology has gradually earned proponents in the domain of natural science as well as in the social sciences. For instance, Daniel Siegel (2010), a renowned cognitive psychologist and brain researcher at Harvard University, argued that human beings’ potential to exert mental effort—mindfulness per se—could overpower as well as override the habituated and fixated neural connections of the brain and thus produce considerable variations, known as brain plasticity. The learning process is, therefore, never the same, varying from person to person; it is influenced by contextual factors, individual personality traits, and psychological traits. Siegel furthermore argued that even the natural sciences, privileged as free from bias, can be relatively observer-dependent, subjective, and full of variation. Ultimately, the natural sciences may not be so observer-independent, objective, unchangeable, and permanent as most people assume.

**GT Data Analysis Procedure**

Similar to data analysis procedures in most qualitative research, content analysis is implemented by GT researchers; nevertheless, its innovative data analysis procedures distinguish GT from other qualitative research methodologies. Because GT researchers view reality as a multilayered and complex entity—fluctuating Gestalt—they may not be interested in the “top-down” data-analysis model with predetermined hypotheses to analyze data. On the contrary, they prefer establishing the theory from the ground up, using a bottom-up data-analysis procedure that includes all probable datasets, and taking part in the process of constructing collective reality with participants. These ontological and epistemological stances generate the following unique data-analysis strategies in GT.
First, in contrast with the conventional quantitative study, in which, the researcher tries to formulate hypotheses in the form of operational as well as testable variables based on a literature review and then tests the hypotheses with statistical approaches to determine whether their theoretical assumptions are valid, GT researchers adopt an innovative procedure. The literature review is required in GT; however, it does not necessarily serve as the prerequisite leading to the research problem statements and hypotheses-testing. In general, the literature review serves two major functions in GT. It provides a general understanding, a framework of background knowledge for researchers to follow, to understand probable factors or variables pertaining to the very issues to be researched and studied. Also, during the data-analysis procedure, the literature review provides a theoretical foundation, assisting GT researchers to sort data in a more systematic manner and eventually to formulate substantial theories. In other words, in the GT data-analysis procedure, the literature review is not a separate part of the study itself but a handy “map” to remind researchers constantly of the larger context—the Gestalt—which the GT researcher is currently in and working on (Glaser, 1992).

Second, the GT researcher performs content analysis in a very systematic manner. In GT, the process of conducting content analysis is recursive, interactive, and reflective, and constantly driven by emerging data. Glaser (1992) strongly warns researchers that if the GT researcher draws conclusions hastily and subjectively without patiently waiting for themes or patterns to emerge naturally, the themes or patterns drawn from data will be insufficiently “saturated.” By definition, data saturation occurs when the researcher is no longer hearing or seeing new information. In other words, only when no more novel
themes or patterns emerge from the data set are the data considered saturated. Then, the content analysis procedure in GT is considered complete (Siegle, 2010; Strauss & Corbin, 1997).

Unlike quantitative researchers who wait until the end of the study to analyze their data, qualitative researchers analyze their data as soon as they acquire the first data and keep analyzing them throughout their study. At first, the GT researcher makes constant and recursive comparisons of substantial data sets drawn from various sources, for instance, qualitative data, such as transcripts of participants’ or interviewees’ narrative accounts and quantitative data, such as administering questionnaires and instruments to collect numeric data, in order to discover repeatedly emerging patterns or themes. The researcher (a) assigns various codes to the smallest units or meaningful chunks of data, (b) groups codes sharing similar traits into bigger units, which are named concepts, and then (c) converges relevant concepts together into categories, which aim to encompass multiple concepts in a coherent and consolidated manner. Once emerging categories are identified and confirmed, then these discovered categories are further consolidated, organized, and synthesized into a comprehensive theory, with the GT researcher’s best intention that all data could be fitted into the theory properly. In fact, the effectiveness or validity of the GT data analysis is judged by the following four domains: fit, relevance, workability, and modifiability (Glaser 1992, 1998).

Fit entails how closely concepts match the incidents they are to represent; relevance involves how well and with how much relevance this GT study could represent as well as deal with the real concerns of participants to be studied. Namely, the
researcher asks whether the GT study provides deeper and meaningful insights for understanding the subjects or incidents under study. Workability explains how the problem is to be solved under varied circumstances. Finally, modifiability regards the manner in which the results of GT research could be applicable across similar situations. That is to say, even when new relevant data are discovered and introduced into the original dataset, a modifiable theory can still maintain its ability to integrate novice phenomena into its original theory without yielding unsolvable contradictions.

Finally, the GT researcher may try to illustrate the reliability and validity of the formulated theory by employing numeric data to support further evidence (Charmaz, 2006). He aims to verify the reliability as well as validity of the formulated theory by comparing and converging qualitative and quantitative data simultaneously to see whether they generate similar outcomes. Triangulation in GT could also imply that the GT researcher is to some extent, allowed to discuss—even induce—more data or opinions from participants as well as adding his or her own interpretations of the dataset to clarify or solidify theories.

**Why and How GT Methodology Is Applicable to the Current Study**

**Originality and pilot study.** Because of my ethnic and academic background, which is identical to those of the online learning participants from Taiwan taking part in the current study, I attempted to explore the complicated phenomena of cross-cultural online collaborative learning not only to understand this issue further but also to gain deeper insights into the online learning situation I have frequently encountered. Specifically, contributing knowledge to the online learning field as well as understanding
the research itself are both major concerns in this study. In addition, to my knowledge, studies related to the issue of cross-cultural collaborative online learning is still relatively sparse. What serves my purpose best is discovering and providing an appropriate theoretical framework on this issue for prospective online learners and instructors in the future by integrating well-established theories derived from Western psychology and non-Western perspectives and interpretations.

Because of its originality, the current research was regarded as a pilot–exploratory study. Various issues addressed in this study, such as how coping mechanisms operate or what probable impacts participants with limited English proficiency may have on the cross-cultural collaborative online learning setting, just to name a few, have not yet been comprehensively and systematically explored in other studies. In addition, unlike conventional studies, GT does not put too much emphasis on the testing of hypotheses but instead on discovering probable variables, themes, and patterns emerging from the dataset in order to form a testable theory eventually. In view of the conditions noted above, GT may be the most appropriate research methodology for the current study.

**Discovering themes and establishing testable theories.** GT researchers can be considered legitimate in adopting this unconventional approach to methodology and data analysis, valuing both qualitative as well as quantitative data, and even allowing the researcher to interact with data and participants by adding his or her own interpretations. Notably, conducting GT research methodology and implementing GT data analysis procedure serve one major purpose: to establish the best-fit theory instead of doing hypotheses-testing based on theories already established. According to Glaser (1998),
adopting GT is the most appropriate for a pilot or preliminary study used to explore unknown phenomena, discover plausible variables or factors that may pertain or contribute to the issues under consideration. Under the condition of conducting a pilot study, in which probable variables as well as notable phenomena have not yet been discovered and explored in detail, directly testing hypotheses but intentionally excluding other prospective variables may be inappropriate, even somewhat arbitrary. Therefore, in some research fields where related studies are inadequate, digging out and uncovering emerging variables and patterns first and then basing discoveries on them may be more methodologically desirable in forming comprehensive, well-organized, and most important of all, testable theoretical assumptions or claims for verification in follow-up empirical studies (Creswell & Clark, 2007; Eisenhardt, 1989). Doing so provides a direction for further study that subsequent researchers could follow and gradually build the theory.

The second concern regards data analysis procedure. Some have questioned whether GT, the combination of adopting both qualitative and quantitative data, is sufficiently rigorous as a valid and sound research methodology; and whether the results generated by GT data analysis procedure are valid. Whether results from GT methodology may be applicable or generalized across similar situations has also been debated. In fact, GT has served well as a methodologically sound bridge between qualitative and quantitative research paradigms for decades (Partington, 2002). Its unique integration of quantitative and qualitative data qualifies GT as mixed design, aimed at pursuing exploratory studies on the basis of individual cases. In fact, the mixed
design has earned a legitimate reputation as an effective research design in terms of addressing unexplored issues in depth, especially in the case studies (Creswell & Clark, 2007). According to Cronbach (1975), the founder of GT and case study research, the strategy in GT research is to produce working hypotheses, a theoretical sample, or a representative case in order to understand other similar cases. Researchers like VanWynsberghe and Khan (2007) argued that the case study approach not only depicts certain cases in depth, but outcomes generalized from these cases also provide insights and even predictions applicable to similar cases. In empirical studies, researchers may run the risk of committing errors in probabilities, represented by the p value; in GT methodology, although variations may occur from case to case, well-established theories generated from one case can serve as the theoretical sample to interpret or predict similar cases if all data acquired are carefully handled and saturated without researcher bias (VanWynsberghe & Khan, 2007).

At this point examples illustrating reasons that certain case studies with the power of representatives, or sample cases, can also be generalized into other similar cases may be helpful. For instance, in an online learning case study, McLoughlin and Oliver (1999) designed a culturally sensitive and culturally inclusive learning environment mainly for indigenous learners in Australia. They intentionally took Australian learners’ unique features and learning environment into consideration. For example, in this study, some participants were indigenous Australian learners, who may not have had opportunities to access the Internet frequently; so the researchers intentionally designed a face-to-face section for this online learning course called “help desks,” to meet the needs of Australia
indigenous learners and provide instant feedback in the form of cognitive scaffolding from instructors. Afterward, the researchers indicated that successful and productive experiences with implementing face-to-face “help desk” sections for Australian indigenous learners in this case study turned into a standardized online learning design in their later studies. They applied the same online course design procedure including face-to-face sections to teach students from Asia and gained similar promising results and success. In an oft-cited case study Vonderwells (2003) examined asynchronous communication patterns and student preferences from various angles and indicated that the results of this study have implications for the effective design of asynchronous communication as well as for interaction between student and instructor, between student and student, and between student and content. In fact, by contrast with several traditional numeric data-driven studies, his case study has been cited 161 times, making it one of the most frequently cited articles in the online learning field with regard to this issue.

**Method**

The following section includes participants’ backgrounds; the general context of the study, such as the specific online learning platform and learning materials adopted in this study; data analysis procedure; and instruments administered to assess participants’ English proficiency, coping skills, and culture intelligence.

**Participants**

Initially, 42 participants, among them 17 Taiwanese and 25 Americans, took part in this study. The Taiwanese participants were adult students over 25 years of age, recruited from the educational psychology graduate program at National Taiwan Normal
University, a prestigious, comprehensive public university located in metropolitan Taipei, the capital of Taiwan.

All American participants were adult students over 25 years of age in master’s degree programs at Kent State University. By the end of the study, however, a large number of participants withdrew. Eleven Taiwanese participants (nine female and two male students) and 20 American participants (13 female and seven male students) remained active.

Note that motivation for participation varied. American participants at Kent State University were required to engage in this study to earn three credits for a learning theory course; Taiwanese participants, by contrast, were volunteer participants. Graduate students who expressed strong interest in taking part in this study when I was recruiting in Taiwan, they were also encouraged by their respective advisors to join this study to experience a genuine online collaborative learning process with American peers. During the process of joining the online learning collaboration, I periodically sent their online learning performance reports summarized from WebCT to their respective advisors and instructors at Taiwan National Normal University for reference. Unlike their American peers; however, Taiwanese participants were under no obligation to finish this study. If they did, they did not get any credit from Kent State University.

Taiwanese participants were nonnative speakers of English, but their English proficiency varied as shown in their TOEFL reading and writing scores. As for their prior knowledge of online learning, at National Taiwan Normal University, Taiwanese participants had completed at least two online or blended courses (three credit hours for
each) before they engaged in this current study. Thus, they had some experience with online learning; however, they had no experience interacting with American peers in English online.

Arguably, whether in traditional or online settings, one’s prior knowledge, age, gender, and academic background may affect learning performance. In this study, covariate variables such as these were all controlled to some extent. The major differences between Taiwanese and American participants were motivation, language proficiency, and cultural backgrounds.

**Context: Online Learning Platforms, Courses, and Materials**

Taiwanese and American participants took part in Learning Theories (EDUC 66524, three credit hours), a course that ran from August 31 to December 10, 2005, at Kent State University. This was an online course, and Taiwanese and American participants interacted and collaborated with one another solely online. This course was taught by a well-qualified, experienced, and innovative instructor at Kent State University, assisted by me.

The primary textbook adopted in this course was Ormrod’s (2003) *Human Learning*, one of the best-selling educational psychology textbooks, earning a reputation as the best introductory book for learning theory.

WebCT Vista version 3.0, adopted by Kent State University as the major online learning platform in 2005, was the learning platform adopted for the online cross-cultural collaboration for these two groups of participants. A common criticism of WebCT Vista regards its complicated multifunctions, originally designed with good intentions but
difficult to operate and use (Pain & Le Heron, 2003). Those challenges are generally
technology-related, including its extreme reliance on Java operation and high browser-
sensitivity. Nevertheless, WebCT Vista has its own advantages. For instance, it provides
a high level of flexibility and user empowerment for online course designers and learners.
Siekmann (2001) and Orsini-Jones (2004) showed that Web CT is effective and valid in
terms of online learning at least in the following aspects: (a) It is an online leaning
platform that can facilitate participants’ immediate and constructive interaction; (b) it is
an online learning platform with a powerful capacity to capture the genuine interactive
process of online learning among learners; (c) it is an online learning platform on which
information can be constantly and easily referred back for prospective instructors,
researchers, and users; and (d) it is an online learning platform with several unique
embedded functions, such as whiteboard and chat room that can be operated
synchronously, facilitating online collaboration and student-centered learning.

Procedures

Taiwanese and American graduate student participants registered and logged into
the Web-CT Vista server at the beginning of the study and familiarized themselves with
its various functions. The WebCT Vista website provided checks for users’ browsers,
Java and Internet security set-up, and instant feedback for participants to troubleshoot
problems. To meet students’ various needs, a section called Questions About the Course,
or the Coffee Shop, was set up on WebCT, in which the instructor and researcher
responded to any participants’ questions. As research assistant, I assisted the course
instructor with administrative details, such as facilitating online discussions, responding to participants’ questions, tracking participants’ online discussion threads, to name a few.

Because of the course requirement of earning credit, American participants were required to master each chapter before proceeding to the next chapter and activation to access the online discussion. Eighteen quizzes, one for each chapter, were prepared and set up in WebCT Vista in advance, and then American participants had to take each quiz and pass it in order to start another new chapter’s reading. In fact, enough questions were available for several quizzes in case of failure once or twice. Besides, participants could also determine their own learning pace; in other words, they could decide their own schedule in terms of textbook reading, quiz taking, and chapter discussion based on their capability. This self-directed and self-paced learning strategy empowered participants and offered learning autonomy and flexibility.

Coming from an educational psychology graduate program with a prior knowledge base on learning theories, Taiwanese participants were not required to take chapter quizzes first to proceed to online discussion.

As Taiwanese and American participants joined the discussion board, they were randomly assigned by the course instructor, and seven or eight collaborative learning groups were formed with ideally four to five members in each group. To facilitate online cross-cultural collaboration, the number of participants from each country was managed to create a balance in each group.

Then, two problem-based learning (PBL) assignments (behaviorism PBL and cognitive-approach PBL) were assigned to each online learning group. After finishing
Chapter 6, the first problem-solving assignment, “School Is Changing,” was assigned. After finishing Chapter 12, the second problem-based learning assignment was given. Participants were provided an authentic case, a vignette; then participants placed in the same PBL learning group had to collaborate together to work on and figure out the most appropriate solutions to the PBL problems provided.

The first PBL behaviorism assignment described a school facing challenges and hence, required a change. The sample of problem-solving scenario designed by the course instructor follows:

Your school district has decided to implement a major change in curriculum and teaching strategies. This change will be based on behaviorist principles (perhaps leading to the conclusion that the district’s leadership isn’t exactly up-to-date, but we will not worry about that right now). For example, there will be a bigger emphasis on good behavioral objectives for all classes from now on as well as using them directly in teaching and assessment. Teachers and, indeed, all school staff, will be expected to use behavioral techniques to ensure good behavior. The instruction itself will reflect behaviorist principles in various ways, such as using mastery learning systems, programmed instruction, and CAI as possible, and other techniques. As part of the transition, the administration has realized that a great deal of faculty development and teacher training will be required. Fortunately, they have set aside enough time and money (no, really) both before the school year and for in-service programs during the year. You have been appointed as the committee to design and develop the instruction and supporting
materials for the faculty development programs. Your first task will be to plan the overall program and develop an introduction to it. That is the problem here: To begin to design the faculty development programs to make this shift to behaviorist teaching strategies work. What do you need to do (Ingram, 2007b)? Sample PBL scenarios can be found in Appendix A.

During the process of implementing online collaborative learning, participants were reminded to follow collaboration guidelines to finish the assignment. To meet this need, participants in each group were constantly reminded to check and recognize the basic concept of collaboration, which was extrapolated and demonstrated on the collaboration website (Ingram, 2007a) designed in advance by instructors. Afterward, these guidelines were adopted to assess each group’s online collaborative performance.

Collectively, based on the two PBL collaborative projects each PBL group submitted, the online collaborative learning performance of each PBL group was evaluated by the course instructor and assigned scores, ranging from the 70th to 95th percentiles. Individually, based on each PBL group member’s performance, which included how frequently as well as how productively they interacted with peers, and how well they could demonstrate their knowledge, creativity, and competence in solving PBL projects, each group member was also assigned an online discussion score, ranging from 1 to 5, by the course instructor.

According to Baskin (2001), collaborative groups are most effective when heterogeneous, that is, with members from various dispositions, learning capabilities, and communication skills. Constructive learning and the process of scaffolding is more likely
to occur in this condition; even the most reserved and reticent members in the group may benefit from online collaborative interaction during the process. As shown above, providing authentic and context-enriched cases with hands-on or problem-based learning (PBL) has arguably been proven the most effective learning strategy in online learning.

**Psychometric Instruments for Supportive Measurements**

To serve as the reliable indicator of Taiwanese participants’ English proficiency, results of Taiwanese participants’ Internet-based TOEFL test (IBT TOEFL at http://toeflpractice.ets.org) were gathered. This test has been used by Educational Testing Service (ETS) for decades, and throughout the States it has served as the indicator of English language competency for international students who are nonnative speakers of English before they are admitted into graduate schools in the US. This test was administered to Taiwanese participants, and their scores on reading, listening, and writing were reported to the researcher.

Then, two psychometric instruments were administered. All American participants took the complete version of COPE, a reliable scale developed by renowned psychologists Carver et al. (1989). Since its development, it has been adopted by many researchers as the major psychometric tool to assess preference for coping strategies. This scale is available online on the website of the Department of Psychology at the University of Miami at http://www.psy.miami.edu/faculty/ccarver/sclCOPEF.html. All Taiwanese participants took the CQ measurement, a cultural intelligence measurement developed by Ang, Van Dyne, Koh, and Ng in 2004, which they published as a cultural
intelligence handbook in 2008 (Ang & Van Dyne, 2008). The complete COPE and CQ measurements can be found in Appendices B and C.

Finally, at the end of the study, participants were required to fill out a self-reported questionnaire, in which their demographic data, such as their gender, race, and age, were collected. Then participants completed the online learning self-efficacy survey adapted from Wang and Newlin’s (2002) online self-efficacy instrument, which contained three self-reported items with ratings ranging from 0 to 5 as well as blanks soliciting participants’ narrative feedback. In it, participants were asked the following five questions with regard to their online learning self-efficacy, online learning expectations, online learning satisfaction, challenges encountered during the process of online collaborative learning, and overall comments. The questions follow.

1. What is the most challenging issue you and your group members encountered during this online collaborative learning class?

2. Given a scale of 1 to 5 (1: no efficacy at all; 5: extremely strong efficacy), what is your self-rated computer efficacy in this online collaborative learning class? (Computer self-efficacy is defined as the individual’s beliefs about their abilities to use computers competently in the determination of computer use.)

3. Given a scale of 1 to 5 (1: extremely negative; 5: extremely positive), what is your expectation of the overall outcomes (e.g., grades) of this online collaborative learning class?
4. Given a scale of 1 to 5 (1: extremely negative; 5: extremely positive), what is your overall level of satisfaction in terms of attending the cross-culturally collaborative projects in this online collaborative learning class?

5. Please provide overall comments (likes, dislikes, suggested future improvements) about this online collaborative learning class and study. (For detailed information on this inventory, please see Appendix D.)

**Data analysis procedures.** In the current study, both the written text-based and numeric data were analyzed. Following the GT data analysis procedure, I conducted content analysis based mainly on the following qualitative dataset: (a) contents of participants’ threaded online discussion messages; (b) follow-up focus group interview of Taiwanese participants; (c) numeric dataset, such as scores on the two problem-solving assignments given by course instructor; (d) other supportive quantitative data collected from WebCT Vista, such as participants’ timed log-in sessions, time spent on WebCT Vista, time spent reading and writing messages, online message writing-to-reading ratio, online activity summaries, and tool usage reports, etc.; (e) results of two administered psychometric tests: COPE and Cultural Intelligence Quotient(CQ); (f) subset scores of reading and writing (based on knowledge) in TOEFL, administrated exclusively to Taiwanese participants; and (g) a brief questionnaire with regard to learners’ online learning self-efficacy, expectations, level of satisfaction, challenges, and comments.

Some participants did not respond to the survey or report back to me with their results, causing missing data. In the current study, thanks to WebCT vista, users’ online performance statistics can be automatically tracked; thus, these figures could be adopted
as valuable indicators of online users’ online learning behaviors, providing me with
unprecedentedly convenient and fair data collection tools. As a result, I gathered
quantitative data automatically from WebCT, such as log-in times, time spent on WebCT,
time spent reading and writing posts, and occasionally referred to results obtained from
measurements as supportive data.

Conducting content analysis based on text-based contents is one of the
appropriate ways to realize and gain real understanding of the authenticity of online
learning interaction, and this data-analysis procedure has been adopted by many
renowned researchers in the online learning field. For instance, according to Mason
(1992) and Hara, Bonk, and Angeli (2000), analyzing the written-based data, such as web
logs and online discussion threads, can be regarded as an effective measure to understand
the nature of online learning extended beyond the classroom. By doing text-based
content analysis, Hathorn and Ingram (2002) broke down indicators of collaboration into
categories as follows: SA (simple agreement), Add (adding information), Syn (synthesis),
DR (Direct Response), IC (indirect comment) and DC (direct comment), which have
been served as effective indicators of a group’s online collaboration.

In terms of the data analysis procedure in the current study, as indicated above, I
tended not to adopt a preset coding scheme in advance because it might have affected the
way I interpreted the data in a predetermined frame, making my data analysis procedure
heavily theory-laden, contradicting the spirit of GT research methodology (Glaser, 1998).
As a result, after my analysis of the data as well as ensuring that the data were saturated
by constantly updating and discussing research findings with other raters and participants
in this study, several emerging themes gradually materialized and developed. I then
decided to address the most evident themes exclusively with regard to Taiwanese
participants first and then moved on to address themes related to all online learning
participants. These emerging themes have been illustrated, addressed, and interpreted in
detail in Chapter 4.

To ensure the reliability and validity of the data analysis procedure, the process of
coloring content analysis was performed by another rater with a master’s degree in
higher education administration. By implementing cross-rating, a consensus and
consistency in the content analysis among raters were sought. In addition, I applied the
following two strategies to ensure that the requirement of validity and reliability in GT
was realized. First, a research-oriented reflection blog on the current study was created
as theoretical memos, in which I constantly reflected in depth on the findings and various
perspectives of the study and invited participants to add on their comments for
clarification and verification (Ou, 2006). Furthermore, this blog had been set as the
course blog by me to instruct students at a medical college in Taiwan. Thus, the research
blog proved extremely beneficial to this study because it was displayed as a major course
blog to which my students, colleagues, and anonymous online users were all encouraged
to respond and provide suggestions on my data analysis procedure. All techniques
discussed above represent my best attempts to reach validity and reliability in data
analysis procedure in GT.
CHAPTER IV: FINDINGS

After conducting a comprehensive and detailed content analysis, in this section I have discussed several emerging themes discovered in the data. First, I have demonstrated repeated themes as well as communication patterns specific to the Taiwanese participants. Then, I addressed emerging patterns and themes related to all the online cross-cultural collaborative learning groups and focused on the contrast between Taiwanese and American online participants’ online behaviors and communication patterns. Finally, factors conducive to successful and productive online collaborative learning were analyzed, presented, and elaborated, leading me to establish a theoretical framework that can undergird guidelines for effective practice in online cross-cultural collaborative learning.

Taiwanese Self-Doubt About Insufficient Command of English

One of the most significant themes emerging from the dataset collected from Taiwanese participants’ online discussion revealed (a) self-doubt about their English proficiency and (b) lack of self-efficacy in dealing with language-related challenges in the online collaborative learning situation. They perceived these factors as the most threatening to their success in collaborating online with their peers. Every Taiwanese participant mentioned language-related challenges and believed that his or her insufficient command of English might hamper the progress of online collaborative learning and the completion of the PBL assignment. Apprehensions like these were often expressed explicitly, but they were also sometimes merely implied.
All quotations from communications by participants have been reproduced below exactly as written by them. Errors of all types have been preserved. In addition, as for the coding scheme for all participants in this study, Taiwanese participants are coded T; Americans, A. The first PBL assignment is coded PBL1, and the second, PBL2. All further information related to Taiwanese and American participants’ online collaborative learning performance in this study appears in Table 1 below.

Table 1

American and Taiwanese Participants’ Online Collaborative Learning Performance

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<thead>
<tr>
<th>Taiwanese participants/ Code</th>
<th>Log-in times</th>
<th>Time Spent (minutes)</th>
<th>Message read</th>
<th>Message write</th>
<th>TOEFL reading</th>
<th>TOEFL writing</th>
<th>Message Write/Read * 100</th>
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<td><strong>646</strong></td>
<td><strong>64</strong></td>
<td><strong>7</strong></td>
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</table>

For example, the Taiwanese participant coded T11 had finished his doctoral dissertation in psychology in Chinese with expertise in gifted education but expressed his apprehension about English as follows: “There is one important thing I have to tell you: If you don’t understand my expression, please let me know. English is not my first language, but I will try to make my expression more clear” (October 19, T11, PBL 1, Group 7). Later T11 stated: “Sorry!! I am Lin from Taiwan. I know it is hard for me to finish the project because of English. . . . I hope I can give you a hand (even my hand was a small hand~~) (October 25, T11, PBL 1, Group 7).

T4, a Taiwanese female participant, said: “Thank you Brenda, for understanding my English. Haha. . . . @_@” (November 8, T4, PBL 1, Group 5).

T6, who worked as a research assistant at a university, expressed her concerns as follows: “I am not a naïve English speaker. So if you don’t know what I mean or suggest for, please tell me. ^_____^” (October 6, T6, PBL 1, Group 2b).
T3 admitted that because of her insufficient English capability she did not know exactly what the course instructor wanted her to do. She said, “Sorry for not to online for a long time. Because I don’t exactly know what Dr. was want us to do (October 1, T3, PBL 1, Group 4).

T15, who served as a senior college instructor teaching social psychology in a junior college, repeatedly stated: “My English is poor, hope it would not bother you!” (September 30, T15, PBL 1, Group 2b). Similarly, he wrote: “I had tried to prepare for the PowerPoint, but it is hard for me to set the form and content, especially with my poor English” (October 18, T15, PBL 1, Group 2b). He also wrote: “With my poor English, I have puzzled for a long period” (September 30, T15, PBL 1, Group 2b).

T1, who had been a special education specialist in Taiwan, expressed her apprehension as well. She wrote, “If you cannot understand what I write, please excuse me and feel free to correct my mistakes” (T1, December 4, PBL 2, Group 7).

Even T17, a Taiwanese high school English teacher, had little confidence in her English capability, especially when she had to exercise her it to the fullest to cope with this unfamiliar online learning situation. She asked for “forgiveness” when chatting with her American peers. In her message, she stated: “By the way, if I make any grammar or spelling mistakes when chatting, please forgive me” (November 30, T17, PBL 2, Group 9).

T16 was assigned by her PBL group members to design a cross-cultural lesson plan; however, in her message she revealed her difficulties in fulfilling the task and expressed her apprehension over her insufficient English language ability: “To be honest,
to make lesson plan by a different language is a completely new experience for me. The product I make may not reaching your expectation. Therefore please do stand what I have done, and feel free to tell me your suggestion” (December 5, T16, PBL 2, Group 8).

T4, one of the most diligent and devoted participants in this study, frequently expressed her gratitude for her American peers. Before she submitted the PBL assignment, her American peers invested a tremendous amount of time to correct her typos and grammar mistakes and to rewrite several passages in order to make the PBL project more readable and comprehensible. T4 said, “Thank you for posting the revised version and correcting my grammar” (December 9, T4, PBL 2, Group 7).

The numeric data also showed that messages referring to language-related (challenge-related) issues comprised a very high proportion of the Taiwanese participants’ messages. For instance, I coded and recorded 29 messages related to language concerns of the total 228 messages posted by Taiwanese participants. Thus, almost one seventh of the messages written by Taiwanese participants concerned striving to cope with language issues instead of focusing their energy on online learning or facilitating the process of collaboration itself. Online learning self-efficacy and expectation scores collected from Taiwanese participants’ demographic data verified my argument: Two-tailed two independent sample t-test of Taiwanese and U.S. participants on their online learning self-efficacy and online learning expectation indicated that Taiwanese participants’ online learning self-efficacy, t(1, 17)=4.29, p=.0005, and online learning expectation, t(1, 17)=2.31, p=.033, were both lower than that of their American peers.
If observed solely from the WebCT online asynchronous discussion board, some language-related self-doubts, especially those of Taiwanese participants who withdrew from the process of online cross-cultural collaborative learning, could not be accurately discovered, depicted, and analyzed. For instance, after my recruiting of participants at National Taiwan Normal University (NTNU), 22 Taiwanese participants expressed their willingness to participate; however, by the end of this study, 11 students, or half, had withdrawn; and some of them never logged into an online learning session. Since these 11 participants did not write even a single word on the online discussion board, I could not analyze their online discourse to interpret why they decided to withdraw from the online collaborative process. As a result, the thoughts and opinions of those participants who never became involved were gathered in the follow-up focus group interview.

Based on the follow-up focus group interview with three inactive or withdrawn participants, I found similar themes and conclusions as those found on the WebCT discussion board. Their self-doubts about their English abilities and their lack of self-efficacy in using English to cope with challenges of the online collaborative learning environment resulted in their absence, premature withdrawal, and high drop-out rate. Typical responses from interviewees in the follow-up focus group included the following:

“Due to my poor English, I did not feel any interest in reading or writing such long messages written in English. It was actually a very boring and terrifying process” (T9, follow-up focus group interview).
In the focus-group T13 explained her absence in detail:

I think I cannot read and write English well enough to finish this project. Attending this online learning project would take the tremendous toll on me. Besides, after I finished this project, I could not get any certificate from this online learning experience. To be honest with you, I attend this course because I am under the peer pressure and at the request of my course advisor (T13, the follow-up focus group interview).

T8 also explained the reason for his withdrawal:

I would like to attend this online learning. However, my English was poor, and I was not sure if Americans would understand what I said. Thinking of this embarrassed me. Besides, it would take me too much time to just read through all those stuff written in English. . . . I may need to look up a lot of unfamiliar words in my dictionary. It bothered as soon as I thought of this (T8, follow-up focus group interview).

Unproductive Online Message Reading and Writing

Language-related challenges also reflected Taiwanese participants’ unproductive online learning performance. In terms of the definition of online learning performance, quantitatively, I primarily adopted data automatically gathered from WebCT Vista, which included participants’ (a) times of log-in sessions, (b) time spent, (c) time spent in online message reading, and (d) online message writing, referring to various numeric data as supports.
I also regarded the four factors noted above as indication of participants’ mental resiliency to persevere throughout the online cross-cultural collaborative learning process. The more WebCT Vista log-in sessions and the more time participants wanted to devote to and stay active online, reading as well as writing messages, the more mental resiliency and perseverance in terms of online collaborative learning they showed. These data appear in Table 1. Qualitatively, their online learning performances were analyzed following GT content analysis methodology.

At first, of the 22 Taiwanese participants recruited initially, only 16 ever logged into WebCT, including those who logged in only once or twice. As a result, among these 16 participants, only 11 could be considered “active,” logging in more than 10 times and active in at least one PBL assignment. At the end of the study, 11 of the 22 recruited Taiwanese participants had withdrawn early in the process of collaborative learning or dropped out during the study. Compared to the Taiwanese participants, of the 25 American participants who enlisted in this study, 20 of them remained active at the end of the course; only five were inactive or withdrew.

Table 1 showed the mean number of log-in times of the 16 Taiwanese participants was 29.41 (SD=31.92) during the three-month period (from September 1 to December 9, 2005), and the median number of their log-in times was 13. For the 22 American participants, the mean number of their log-in times was 105.91 (SD=68.98) and median, 110.

Second, the mean time spent on all participation sessions by the 16 Taiwanese participants was 13.78 hours (827.41 minutes, SD=954.21 minutes), with a median 6.55
hours (393 minutes). In other words, once they logged in, eight of 16 Taiwanese participants spent 30.23 minutes or so (6.55 hours equals 393 minutes, divided by 13, the median times Taiwanese participants logged in) on each session reading, reviewing, and responding to messages. This numeric data compared to American participants’ mean time spent, 46.08 hours (2765 minutes, $SD=1849.74$) with a median of 39.96 hours (2,398 minutes), suggested that in each log-in session, half the American ($N=11$) participants spent at least 22 minutes reading, reviewing, and responding to messages (2,398 minutes/110 median time of log-in session).

In terms of their online message reading, WebCT dataset records suggested that the mean number of online messages read by the 16 active Taiwanese participants was 376.74 ($SD=491.26$), with a median 123 messages. The records also suggested that in each log-in session half the Taiwanese participants spent 30.23 minutes reading 9.46 messages (median 123 messages/median 13 log-in time sessions). This numeric data could be compared to American participants’ mean number of messages read, 1159.73 ($SD=1946.69$), with median 646. As examined further, records suggested that in each log-in session, half of active American participants spent 22 minutes read 5.87 messages.

In terms of Taiwanese participants’ online message writing, the mean number of online messages written by the 16 Taiwanese participants was 13.41 ($SD=18.59$), with a median 4.00 messages. Considering that the time spent in each log-in session was 30.23 minutes, one sees that half the Taiwanese participants in each log-in session wrote 0.30 messages (4 median written messages/13 median log-in times) and read 9.46 messages.
(123 median messages read /13 median log-in times) on the discussion board in 30 minutes (393 median minutes/13 median log-in times).

These numeric data can be compared to American participants’ mean 59.26 ($SD=38.95$) online posting–writing with median 64. In each log-in session half the American participants wrote 0.58 messages (64 median time writing messages/110 median log-in times) and read 5.87 messages (646 median time reading messages/110 median log-in times) within a 22-minute time span (2,365median time spent minutes/107 median log-in times). Therefore, during each log-in session, in terms of online message reading rate, Taiwanese participants earned the higher rate if compared to their American counterparts (online message reading ratio, Taiwanese = 0.31, 9.46 message reading/30 minutes; American = 0.26, 5.87 message reading/22 minutes).

In each log-in session, in terms of online message writing rate, Taiwanese participants performed far behind if compared to their American peers (online message writing ratio, Taiwanese=0.30, 4 median message writing/13 median log-in session); American=0.58, (64 median time writing messages/110 median log-in times).

The online message writing/reading ratio, an indicator I equated with participants’ willingness to take action and engage in and contribute to online collaborative learning, was also worthy of attention. The average online writing to reading ratio of Taiwanese participants was .035 (13.41 average online message writing/376.74 average online message reading). This suggested that on average, all Taiwanese participants wrote one message after reading 28.09 messages (376.74 average online message reading/13.41 average online message writing), which was also far behind their American peers, if
compared to American participants’ message reading to writing ratio—.05 (59.26 average online message writing/1159.73 average online message reading). Thus, on average, all U.S. participants wrote one message after reading 19.64 messages (1159.73 average online message reading/59.26 average online message reading).

After examining data cited above, patterns gradually emerged. Compared to their American peers, Taiwanese participants seemed to read more, or at least, they read the same rate as their American peers but produced (wrote) far less. From the psycholinguistic perspective, the question arose as to whether Taiwanese participants’ ability to transform intrapersonal communication (reading) into interpersonal communication (writing) was hampered because of their limited language proficiency. Although they read as diligently as their American peers, overall they seemed to lack something powerful and motivational—an inner drive to boost their confidence in English writing to contribute to the online collaborative learning process. Somehow, they seemed apprehensive and uncomfortable expressing themselves in English and interacting with their American peers even if they had actually read a lot. Even though some of them logged in a couple of times, striving to participate in several sessions of online discussion, they remained relatively reticent during the online collaborative learning process. In addition, Taiwanese participants’ TOEFL score showed positive correlation with their online learning performances, such as message reading and message writing, but no significant impact was shown when comparing with their number of log-in sessions and time spent (See Table 2). Something other than their English proficiency affected their online learning performance positively or negatively.
Table 2

Correlation Coefficients r: Online Learning Performance, TOEFL, COPE and CQ

(Taiwanese Participants)

<table>
<thead>
<tr>
<th>Correlation Coeff r</th>
<th>Log in session</th>
<th>Time Spent</th>
<th>Message read</th>
<th>Message write</th>
<th>TOEFL Read</th>
<th>TOEFL Write</th>
<th>COPE (P-focused)</th>
<th>COPE (E-focused)</th>
<th>CQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log in session</td>
<td>.69*</td>
<td>.65*</td>
<td>.75*</td>
<td>.40</td>
<td>.71*</td>
<td>.20</td>
<td>.01</td>
<td>.41</td>
<td></td>
</tr>
<tr>
<td>Time Spent</td>
<td>.69*</td>
<td>.71*</td>
<td>.92*</td>
<td>.39</td>
<td>.60*</td>
<td>.40</td>
<td>.17</td>
<td>.67*</td>
<td></td>
</tr>
<tr>
<td>Message Read</td>
<td>.65*</td>
<td>.71*</td>
<td>.75*</td>
<td>.19</td>
<td>.48</td>
<td>.43</td>
<td>.12</td>
<td>.42</td>
<td></td>
</tr>
<tr>
<td>Message Write</td>
<td>.75*</td>
<td>.92*</td>
<td>.75*</td>
<td>.39</td>
<td>.58</td>
<td>.26</td>
<td>-.02</td>
<td>.51</td>
<td></td>
</tr>
<tr>
<td>TOEFL read</td>
<td>.40</td>
<td>.39</td>
<td>.19</td>
<td>.39</td>
<td>.73*</td>
<td>.03</td>
<td>-.25</td>
<td>.56</td>
<td></td>
</tr>
<tr>
<td>TOEFL write</td>
<td>.71*</td>
<td>.60*</td>
<td>.48</td>
<td>.58</td>
<td>.73*</td>
<td>.11</td>
<td>-.28</td>
<td>.45</td>
<td></td>
</tr>
<tr>
<td>COPE (P-focused)</td>
<td>.20</td>
<td>.40</td>
<td>.43</td>
<td>.26</td>
<td>.03</td>
<td>.11</td>
<td>----</td>
<td>.61*</td>
<td>.50</td>
</tr>
<tr>
<td>COPE (E-focused)</td>
<td>.01</td>
<td>.17</td>
<td>.12</td>
<td>-.02</td>
<td>-.25</td>
<td>-.28</td>
<td>.61*</td>
<td>----</td>
<td>.45</td>
</tr>
<tr>
<td>CQ</td>
<td>.41</td>
<td>.67*</td>
<td>.42</td>
<td>.51</td>
<td>.56</td>
<td>.45</td>
<td>.50</td>
<td>.45</td>
<td>----</td>
</tr>
</tbody>
</table>

* P value < .05, with critical r=± .60, n=11

The qualitative and quantitative data illustrated above converged to reveal one apparent phenomenon: No matter what their level of language proficiency, all Taiwanese participants seemed to worry about whether or not they could perform effectively in online collaborative learning because of English language-related issues. They may have felt self-doubt about their English language proficiency, which in turn led to their lack of confidence in employing English as a communication tool to fulfill the various requirements of implementing online collaborative learning, such as engaging in PBL learning by constantly reading, exchanging, and responding to messages from their peers. As a result, Taiwanese participants’ sensitivity to their insufficient command of English influenced their willingness to deal with online learning challenges as well as their
perseverance in online learning as shown by their premature withdrawal, lower log-in sessions rates, less time spent, and unproductive message reading-to-writing ratio.

**Types of Language-Related Self-Doubt**

Of the 228 messages posted by Taiwanese participants, 29 messages revealed self-doubt about their English ability and their apprehension about the probable challenges of online learning. Among these 29 messages, three types of language-related apprehension emerged.

Type I included statements of Taiwanese participants’ apprehension that they may fail to express themselves correctly in English or make themselves understood in English (Type I=10 messages). Coded as “apprehension about consequences,” Type II included Taiwanese participants’ predictions that they may suffer as a result of their limited language ability: They worried about misunderstanding what their American peers and instructor intended, withdrawing from online learning, wasting a tremendous amount of time merely managing to pull themselves back onto the right track, or being criticized by their online learning peers (Type II =11 messages). Type III, coded as “implementation,” included all language-related issues with regard to how, when, or in what way Taiwanese participants would tackle online learning difficulties presented to them (Type III=8 messages).

Type 1, concerning Taiwanese participants’ self-doubt, included the following examples. During the discussion, T11 stated: “There is one important thing I have to tell you: If you don’t understand my expression, please let me know. . . . I will try to make my expression more clear” (October 19, T11, PBL 1, Group 7).
Similarly, T15 wrote: “I am not sure that the words or grammar are expect express to you two. . . . I am worry about my poor English and little contribution, too” (December 5, T15, PBL 2, Group 3).

“Hi! Nicole and Christine! I am Yang, your Taiwanese classmate. My English is not very good, I would be very thankful if you be patient with my poor English. I am very glad to take part in this group, and I belief that this is going to be a very exciting experience for me to work with you” (October 16, T16, PBL 1, Group 8).

“I will write my idea here at any time, if I have inspiration. Hope that you can understand (My English is not very good). If I have any misunderstanding to the discussion of the question, please tell me directly” (October 4, T2, PBL 1, Group 3).

Type II included statements of Taiwanese participants’ apprehension about the consequences of insufficient English language abilities. T16 was assigned in her PBL group to create a plan for enhancing cross-cultural groups’ cultural awareness. Although she tried hard throughout the online learning process to be adept in lesson plan design, she had apparently confronted various difficulties beyond her insufficient English ability.

Her message follows:

To be honest, to make a lesson plan by a different language is a completely new experience for me. The product I make may not reaching your expectation. . . . My English is quite poor. Please help me correct the plan, if there is any mistake that I made. . . . The assignment here is pretty much difficult for ours in Taiwan. Please be patient if I make any mistake and feel free to tell me.” (December 7, T16, PBL 2, Group 8)
Not only did she apprehend that she may not meet the expectation of her group members, but she also paid the price for her insufficient English ability. She misunderstood the requirements of the PBL assignment and felt quite embarrassed when she made such mistakes. Eventually, she had to entirely give up her lesson plan. She wrote: “Because of my poor English, I am sorry I misunderstand Dr. Was’s PBL assignment. We got to turn out only one class plan, right? . . . That’s quite embarrassing. Please just forget what I’ve wrote before this” (December 7, T16, PBL 2 Group 8).

T14, in her very first self-introduction message to her group members, found it difficult to introduce the course she taught in Taiwan in English because there was no similar comparison; therefore, she could not correctly provide her background information to her group members: “I don’t know how to name the course I taught in English” (November 16, T14, PBL 2, Group 2).

Participant T3 wrote: “Sorry for not to online for a long time. Because I don't exactly know what Dr. Was wants us to do” (October 16, T3, PBL 1, Group1). She had spent a tremendous amount of time, almost two months after the beginning of the PBL project just to “figure out” what was going on in terms of this PBL project. She wrote: “I cannot find the group I belong to for weeks! Finally, I think I'm in the group. Sorry for being late, and I spent a period of time to figure out what's proceeding. . . . Sorry again for my absence” (October 24, T3, PBL1, Group 5).

Type III revealed issues related to collaboration procedures and implementation, such as miscellaneous strategies adopted with regard to how, when, or in what way they could proceed and contribute to online collaborative learning more effectively despite
their self-doubts about their English proficiency and lack of self-efficacy in online collaborative learning. The following are typical examples.

“Sorry! I am Lin from Taiwan. I know it is hard to finish the project. IF I CAN DO SOMETHING, PLEASE LET ME KNOW (ex, find out some papers, write these papers’ abstract . . .). I hope I can give you a hand (even my hand was a small hand~~~).” (October 25, T11, PBL 1, Group 7)

“I had tried to prepare for the powerpoint, but its hard for me to set the form and content especially with my poor English!!” (October 18, T15, PBL1, Group 2b)

“In Outline 2, whether we just applied some, not all, technique. . . With my poor English, I have puzzled for a long period. As for the due day, I think the outline 2 is ok for us. I am sorry for not offer enough contribution” (October 28, T15, PBL 1, Group 2b).

“Dear all, I have add some ideas. I will see if I can think more before deadline, and it seems that I still cannot attach files, I’ve sent to Kelly’s mail box. Please check it later” (October 28, T15, PBL 1, Group 2b).

“Can we discuss and revise on that too? Does the powerpoint have to be the final version? Can it be edited after being posted?” (October 6, T5, PBL1, Group 5).

Other than three types of language-self doubt, Taiwanese participants’ improper English expressions caused awkward misunderstandings. T4, for example, was a devoted and well-respected junior high school teacher, keeping company with her students even during the lunch break. Logging out, she wrote: “I have to go now . . . because I need to
attend the class to have lunch and sleep with my students soon” (December 6, T4, PBL2, Group 7).

In T6’s message, she apparently confused or mistyped the word naïve instead of native: “PS. I am not a naïve English speaker. So if you don’t know what I mean or suggest for, please tell me. ^___^ (October 6, T6, PBL 1, Group 2b discussion).

Participants from cross-cultural backgrounds may even embarrassingly misunderstand and misidentify one another without the assistance of cultural background knowledge provided by language. For instance, throughout the online discussion process, American participants had misidentified “Ju-Ling” as a male participant. In fact, Ju-Ling is a female name, which could be easily recognized and identified by Taiwanese-speaking participants. Eventually, she intentionally adopted all capital letters to clarify this gender confusion: “Well, . . . I am SHE, NOT HE” (October 20, T5, PBL 1, Group 5).

Although extracted from the relatively limited dataset, these messages managed to illustrate the way Taiwanese participants doubt their own English abilities, their apprehension about the probable consequences of their insufficient English ability and their struggles to find out practical strategies to deal with challenges that may hamper their online collaborative learning performance. Nevertheless, I wanted to discover whether the self-doubts of Taiwanese participants about their English ability would gradually diminish with the progress of online collaborative learning. If they could eventually gain self-confidence in English and self-efficacy in online learning, I wanted to determine how they did so.
Change in Language-Related Self-Doubt

Examining the changes in the three types of Taiwanese participants’ language-related self-doubts, I discovered that as the study progresses, these diminished. I also discovered that their concerns about the details of collaboration procedure, as shown in Type III, increased; but Type II comments involving apprehensions about uncontrollable consequences remained relatively stable.

In the first online discussion about the PBL behaviorism assignment, Taiwanese participants’ online messages coded as Type I dealing with self-doubt about language ability appeared seven times. After one month, in the second PBL cognition assignment, Type I messages appeared only three times. Furthermore, in the first PBL assignment, almost every Taiwanese participant mentioned this type of apprehension either explicitly or implicitly; in the second cognition PBL assignment, however, only three participants referred to this type of language self-doubt.

As for Type II, messages coded as apprehension about consequences appeared six times during the first PBL assignment; however, in the second PBL assignment, Type II messages appeared five times. Frequency with regard to Type II category was the same. Type III messages about procedures and implementation appeared only twice in the first PBL assignment and six times during the second PBL assignment, a 200% increase.

As a result, the data indicated that although Taiwanese participants constantly encountered anxiety and apprehension over their language ability throughout the entire online learning process, these apprehensions seemed change and evolve into a more
problem-focused and task-oriented direction. For instance, the decreasing frequencies of Type I, self-doubt about language ability, implied that Taiwanese participants gradually shifted their apprehension about language self-doubt into a more practical and problem-solving orientation as shown in the gradual increase of frequencies of Type III, concerns about collaboration procedures, strategies, and implementation.

Nevertheless, the frequencies of Type II, apprehension over consequences, remained relatively identical during PBL 1 and PBL2. It may imply that even if Taiwanese participants had shifted their focus on implementing collaboration procedures or strategies, they were still concerned that their limited English capabilities may hamper their online collaborative learning performance and in turn lead to uncontrollable consequences.

As a result, it may be fair to infer that during the entire process of online collaborative learning, Taiwanese participants were constantly apprehensive of all kinds of language-related difficulties; however, they did not merely sit idly by, worrying and going nowhere. The data were limited, but they offered a rough sketch that although still under the influence of their self-doubt on English, Taiwanese participants learned how to move forward. They gradually focused on how (collaboration procedure-related issues) and in what manners (collaboration implementation-related issues) to deal with various collaborative learning challenges. Table 3 demonstrates this tendency.
Table 3

Types and Frequencies of Taiwanese Participants’ Language-Related Self-Doubts

<table>
<thead>
<tr>
<th>Types of Language-Related Self-Doubts</th>
<th>PBL 1</th>
<th>PBL 2</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 Language Self-doubt</td>
<td>7</td>
<td>3</td>
<td>-57.2%</td>
</tr>
<tr>
<td>Type 2 Consequences Apprehension</td>
<td>6</td>
<td>5</td>
<td>-16.6%</td>
</tr>
<tr>
<td>Type 3 Implementation/Procedures</td>
<td>2</td>
<td>6</td>
<td>+200%</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>14</td>
<td>-7.1%</td>
</tr>
</tbody>
</table>

Messages in which Taiwanese participants mentioned language-related challenges totaled 29 of 228 messages posted.

Themes About Overall Challenges in Online Collaborative Learning

All three types of self-doubt shown by Taiwanese participants demonstrated above were language-related issues. In this section, I reviewed all the messages Taiwanese participants posted online and discovered four themes related to overall challenges or obstacles they continually encountered. My purpose was to discover what proportion of Taiwanese participants’ overall online learning challenges comprised language-related challenges.

In the first PBL assignment, the following four themes with regard to Taiwanese participants’ miscellaneous online learning difficulties repeatedly emerged from their messages (57 messages in total): Theme 1 – apprehension about their limited English ability and the consequences they and their group members may encounter (13 messages); Theme 2 – confusion and bafflement with regard to procedural or technological problems in online learning (16 messages); Theme 3 – concerns with
collaboration procedure questions and strategies (8 messages); and Theme 4 – issues
directly relating to content discussions (20 messages).

Among the four repeated themes in the PBL 1 assignment mentioned above,
Theme 1 was strongly related to Type 1 category of language apprehension, which
reflected Taiwanese learners’ self-doubt about their English proficiency and lack of self-
efficacy in tackling online learning difficulties. As far as Themes 2, 3, and 4 were
concerned, these difficulties were related to how to exercise probable procedures or
strategies to implement online collaborative learning. For instance, Taiwanese
participants’ concerns about how to implement (e.g., set up appropriate procedures or
adopt proper technology) online collaboration effectively, especially under the limitation
of their insufficient English language ability, belong to this category. As a result, Themes
2, 3, and 4 were more related to the Type III category of language apprehension.

To demonstrate briefly Theme 1 in the first PBL group discussion, which involved
apprehension about their limited English and the consequences they may encounter,
examples follow.

After briefly introducing himself, T11 expressed this apprehension in the first
message: “There is one important thing I have to tell you: If you don’t understand my
expression, please let me know. English is not my first language, but I will try to make
my expression more clear” (October 19, T11, PBL 1, Group 7).

In a first post T15 used capital letters for emphasis: “My English is POOR, hope it
will not bother you” (September 30, T15, PBL 1, Group 1b).
The typical examples supporting Theme 2, which involved confusion about technical or technological problems and procedures in terms of online learning, included examples such as the following:

“It's hard for me to select a fixed time to chat with you, though it is a more efficient way. I will try my best to catch up with you. Thank you” (October 13, T15, PBL 1, Group 1b).

“I had tried to prepare for the PowerPoint, but it is hard for me to set the format & content, especially with my poor English!!” (September 30, T15, PBL 1, Group 1b).

“I cannot attach the files, either. Is there any problem? I will try later on, or give me your email address” (October 17, T4, PBL 1, Group 5).

In Theme 3, Taiwanese participants were concerned about how and in what manner they could implement their online learning more effectively and efficiently. Namely, they addressed various online collaboration procedure-related issues.

“I am Lin from Taiwan. If it is OK, may you send this paper to me? I think it is better for me to read what you are reading first and offer comments” (October 19, T11, PBL 1, Group 7)

“I didn’t see any new messages on this web for three days, so I wonder I missed anything or not. Or I missed another web for discussing? I know the deadline, so I HAVE A LITTLE ANXIETY. ～～～ *_*/” (October 26, T11, PBL1, Group 7).

“Dear all, I have add some ideas. I will see if I can think more before deadline, and it seems that I still cannot attach files, I’ve sent to Kelly’s mail box. Please check it later” (September 30, T15, PBL 1, Group 1b).
Typical examples of Theme 4 involved messages exchanged among members while group members interacted with one another and discussed the main contents of PBL assignments. These types of messages were appreciated because they were what the genuine collaborative learning was supposed to be in the entire online collaborative learning process. Examples follow.

“I agree with workshops too. But for some workshops in Taiwan the effect are not good. . . . My suggestion for #1 are as follows” (October 6, T4, PBL 1, Group 5).

“I think IDU ‘Olympics-Social Studies’ will be a great start. It let me remember the Parallel Curriculum Model (PCM) . . . http://www.nagc.org/. There is an article describing the PCM teaching practice, a IDU “civil war” for our reference” (November 22, T2, PBL 2, Group 7).

The numeric data indicated that in the first PBL assignment, the initial phase of online learning, various kinds of online learning issues seemed to be scattered because the frequencies of 4 themes were relatively even (Theme 1=13 times), (Theme 2=16 times), (Theme 3 = 8 times), and (Theme 4 = 20 times). It implied that at the beginning phase of implementing online collaborative learning, in addition to addressing and dealing with language self-doubt, such as in Themes 1 and 2, Taiwanese participants also needed to make extra effort to tackle practical aspects of online collaborative learning issues as shown in Themes 3 and 4.

**Shift in Themes**

With the progress of online collaborative learning, a new pattern emerged. In the second PBL cognition assignment, Taiwanese participants were no longer exclusively
apprehensive about language issues. Similar to their progress in language-related self-doubts, their concerns shifted from a sole focus on language-related challenges to more goal-oriented and positive considerations, such as what feasible measures should they take in order to survive and even contribute to online learning. In a way, their apprehensions over English proficiency still remained the same; nevertheless, it seemed Taiwanese participants gradually learned how to live with it and gained the control over the situation in which they were placed. Even under the limitation of their English capabilities, they no longer explicitly expressed self-doubt about language. Instead, they shifted their focus to working on the measures they should take and the resources they could access to strive to make a productive online learning experience happen.

For instance, T15, although lacking self-confidence in English, still inquired of his American peers whether he could do something to help and contribute: “Social studies in 7 & 8 grade? Does it include some important research principle or procedures? Maybe I can offer some opinions, it will depend on the whole instructional plan. Hope I can offer some assistants” (November 30, T15, PBL 2, Group 3).

“I’m a Taiwanese, with poor English. Language arts seem hard to me, but with your help and instruction, I think it will be a interesting learning experience for me” (November 30, T15, PBL 2, Group 3).

“I am not sure that the words or grammar are exact express to you two, but I do learned very much from you. Is there are anything I need to know or to do, please do let me know. I will keep online everyday before the due day (December 4, T15, PBL 2, Group 3).
The numeric data also resonated with the argument above. After nearly one month, in the second PBL assignment, Taiwanese participants’ Theme 1 messages were down to seven, and Theme 2, down to 12. Nevertheless, messages categorized into Theme 3 and Theme 4 had increased to 15 and 25, respectively (See Table 4).

Table 4

*Theme of Challenge Shifts Between Two PBL Assignments: Taiwanese Participants*

<table>
<thead>
<tr>
<th>Themes</th>
<th>PBL 1</th>
<th>PBL 2</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theme 1 (also related to Type 1 language self-doubt)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apprehension about limited English ability and the consequences they may encounter</td>
<td>13</td>
<td>7</td>
<td>-6</td>
</tr>
<tr>
<td>Theme 2 (also related to Type 2 language self-doubt)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confusion and bafflement with regard to procedural or technological problems in online learning</td>
<td>16</td>
<td>12</td>
<td>-4</td>
</tr>
<tr>
<td>Theme 3 (also related to Type 3 language self-doubt)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concerns with collaboration procedure questions and strategies</td>
<td>8</td>
<td>15</td>
<td>+7</td>
</tr>
<tr>
<td>Theme 4 (also related to Type 3 language self-doubt)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Various issues directly relating to content discussions</td>
<td>20</td>
<td>25</td>
<td>+5</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>59</td>
<td>+2</td>
</tr>
</tbody>
</table>

The four themes of online collaborative learning challenges shifted for several probable reasons. Under stressful situations, for instance, in which PBL groups had to finish their projects within an extremely limited timeframe, all PBL group members were literally “on their own.” American participants were unable to spare time and effort to handle the extra burdens caused by Taiwanese members’ insufficient English language ability. As a result, in the second PBL cognition assignment, Taiwanese participants may have implicitly recognized this very truth, managing to exercise appropriate strategies to
focus on and deal with more practical and goal-oriented aspects of collaboration issues instead of remaining merely mired in the emotional state of apprehension.

Besides, after interacting with American peers for a period of time, they gradually fit in, gained the confidence, and felt a sense of bonding. Those Taiwanese participants supported by American peers with positive and encouraging feedback especially started to regard themselves as part of the collaborative learning members instead of reticent and intimidated observers. Scenarios and messages shown below revealed that these Taiwanese participants supported by their American peers exhibited mental resiliency and exercised problem-focused coping strategies, gradually leaving their language-self doubt behind. Occasionally, even if they did not receive feedback and support from their peers, they still strived to share responsibility for finishing PBL tasks with their peers.

T15 enjoyed a sense of bonding as a result of his constantly interacting with his American peers and receiving positive feedback. As a result, T15 volunteered to complete a PowerPoint presentation for his PBL group members. Although he showed apprehension in his message, he stilled completed his task. “I had tried to prepare for the PowerPoint, but it is hard for me to set the form and content, especially with my poor English! Do you guys think the attachment is OK? Or any suggestions? modifications?” (October 18, T15, PBL 1, Group 2b).

In the second PBL assignment, T16, also encouraged by her American peers, was assigned to complete a cross-cultural lesson plan as a PBL assignment “closer.” Again, even with limited English ability, she took the responsibility. She mentioned: “I add the
language class plan. My English is quite poor. Please help me correct the plan, if there is any mistake that I made” (December 7, T16, PBL 2, Group 8).

In summary, synthesizing Taiwanese participants’ three types of English-language self-doubt and four themes of online collaborative learning, I discovered that their self-doubt over English capability and lack of self-efficacy in terms of online learning somewhat prevailed throughout the online collaborative learning process; however, the qualities and types of their language-related self-doubt shifted. Painstakingly moving out from the mindset troubled by constantly emerging self-doubt, lack of self-efficacy, and confusion over online collaborative learning, Taiwanese participants gradually gained a sense of control over a confusing situation, transforming their concerns into a more practical and problem-focused direction. With the progress of online collaborative learning, especially those Taiwanese participants who received positive feedback from American peers started to feel a sense of bonding among members. Feeling less threatened in the online learning environment, they focused on how to make use of their limited English language capabilities to the utmost, seeking assistance as well as resources available to fulfill their roles. Once they could successfully make this transition, they enjoyed a productive online collaborative learning experience.

**High Frequency of Emoticons**

One of the unique features with regard to Taiwanese participants’ online-message posting was their frequent usage rate of emoticons. Both female and male Taiwanese students, compared to their American counterparts, tended to be more adept in adopting emoticons as well as using them frequently.
Numeric data showed that among the 228 messages posted by Taiwanese participants, pictorial emoticons appear 15 times, whereas in 1,363 messages posted by American participants, emoticons appeared only 10 times, in which even emoticons presented in the form of modal particle sounds, such as interjection or exclamation, were counted.

For instance, in this study, among American participants’ postings, words like *Geez!* or *Brr!* were all counted by me as emoticons. The ratio of emoticon usage to messages posted by Taiwanese participants was 1 to 11, comparing to 1 to 136 by their American peers (See Table 5).

Table 5

*Frequency of Appearance of Emoticons: Taiwanese vs. Americans Participants*

<table>
<thead>
<tr>
<th>Categories/Frequencies of Emoticons</th>
<th>Taiwanese</th>
<th>American</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliant/Confirmative</td>
<td>11</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>Embarrassment/Disappointment/Argument</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Messages Posted in Total</td>
<td>228</td>
<td>1,363</td>
<td>1,591</td>
</tr>
<tr>
<td>Emoticon Usage Ratio (Percentage)</td>
<td>6%</td>
<td>0.7%</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

Two broad categories of emoticons appeared during the online discussions. The first category, coded as compliant and confirmative by me, represented emoticons expressing friendly attitudes and greeting-exchanging. Emoticons such as :) and ^____^ (big smile in Taiwan) and ^_.^ y (big smile accompanied by a “Yeah!” gesture) fell into this category.
Emoticon use belonging to compliant and confirmative category was included in the following messages.

In T11’s post, he mentioned that “I HOPE I CAN CONTRIBUTE TO THIS PROJECT! THANK YOU ALL OF YOU~~~ ^ . ^ y” (October 18, T11, PBL Behaviorism Group 7 discussion). T11 expressed his gratitude and greetings to his American peers by showing the smiley face emoticon very often.

Similar to T11, both T6 and T5 in their posts expressed gratitude and Internet etiquette by using plenty of compliant and confirmative emoticons.

“PS. I am not a naïve English speaker. So if you don’t know what I mean or suggest for, please tell me. ^ ____ ^” (October 6, T6, PBL 1, Group 2b).

“Thanks Kelly for leading the discussion. ^ ____ ^” (October 10, T5, PBL 1, Group 5).

The second category of emoticons, characterized as embarrassment, disappointment, or argumentation, were expressed negative or disturbed emotions. In contrast to the compliant and confirmative emoticons, participants used these to express apology, apprehension, or embarrassment. Emoticons appearing in the current study, such as * ____ */// (in Taiwan indicates blushing because of lackluster performance), @ __@ (feeling extremely awkward), and : ~ / (crying), were sorted into this category. Examples of emoticons falling into embarrassment, disappointment, or argumentation included the following:

“I didn’t see any new messages in this web for three days, so I wonder I missed anything or not. Or I missed another web for discussing? I know the deadline, so I
HAVE A LITTLE ANXIETY. ~~~~~~ * ___ * ///” (October 26, T11, PBL 1, Group 7 discussion).

In T4’s message, she stated, “i am sooo---sorry. @ ___ @” (October 20, T4, PBL 1, Group 5).

Among Taiwanese students, 11 instances of emoticons showing friendly attitudes, joyfulness, and agreement outnumbered the four emoticons falling into the second category. This result indicated that while participating in online learning, Taiwanese participants tended to express more compliant and confirmative attitudes instead of negative emotions, such as complaints, argumentation, or disagreement.

While comparing Taiwanese and American participants in terms of the use of emoticons, I found several differences. First, American participants seldom used emoticons. Among 16 active American participants, just four female participants used emoticons 10 times in their messages, compared to 11 active Taiwanese participants’ 15 appearances of emoticons in 228 messages. American participants apparently preferred written expressions, such as Geez! or Oh, yeah!, or Brrr!, instead of pictorial emoticons.

Second, although American participants also showed gratitude and compliant attitudes by using friendly and smiley emoticons, they showed negative emotions straightforwardly through emoticons. For instance, emoticons American participants used fell evenly into the two categories: Of the 10 instances of emoticon usage, six fell into the compliant and confirmative category and four into the embarrassment, disappointment, or argumentation category. This might indicate that American participants may be more candid and straightforward in expressing their genuine
emotions; however, because of very limited emoticons used by Americans, this claim could not be verified and should be studied further. A9, an American participant, stated, “Oh yeah . . . and I have taken instructional design . . . lol : ) . . . . I hopefully will get them done by Sun. : )” (December 8, A9, PBL 2, Group 4). American participant A9 was the only American participant who used various emoticons; however, she seemed to prefer use emoticons expressed in the form of written sounds (such as Geez!, Brrr! and Thank God!)

Third, to my surprise, how and what types of emoticons were tacitly adopted under heavy cultural influence. For instance, American students tended to use emoticons featuring the mouth; in contrast, Taiwanese participants used emoticons featuring the eyes. For instance, : -) or : - / is the traditional Western smiley or ambivalent face, whereas emoticons such as * __ *, ^ ___ ^, or ^ ___^ y were in general, preferable to and used more frequently by Taiwanese participants. In addition, no Taiwanese participants used the verbal forms of emoticons, such as Geez! or Brrr!, whereas American participants used them occasionally.

Furthermore, because of different language layouts in English and Chinese, Western-style emoticons were mostly displayed in a left-to-right layout; but Chinese emoticons, up and down. For instance, : -) or : - / was the traditional Western left-to-right expression of emoticons while in Chinese styles, * __ *, ^ ___ ^ or ^ ___^ y were used more frequently.

Purpose of Emoticons
Analyzing the position of emoticons’ appearances, I discovered that among Taiwanese participants, all emoticons seemed appear at the end of a posting. Emoticons were, therefore, likely to be adopted by Taiwanese participants as a conclusive or an ending signal of a message. In addition Taiwanese participants apparently adopted emoticons to build cyber bonding. On one hand, they used them to express courtesy, show greetings, gratitude, or even compliance to their American peers; on the other hand, they also used them to convey complex emotions or meanings that may not be easily articulated in writing because of their limited English ability.

By contrast, American participants apparently adopted emoticons as a means to clarify their meanings, namely, to serve the purpose of emotionally and cognitively accentuating what they wanted to convey. In other words American participants did not use emoticons unless these symbols made their meaning clear and comprehensible to peers. They did not use emoticons for emoticons’ sake. Consequently, American participants’ emoticons could be found nearly everywhere in their postings as long as these symbols helped clarify meaning. For instance, A9 wrote, “The thermostat in my apartment is messed up, with the heat kicking on at 53 degrees. Brrr!!! Typing isn’t the most pleasant thing at this temperature!” (December 3, A9, PBL2, Group 4).

A13 used an emotion in the middle of her message: “I am free tomorrow expect during the day while I am at school (unless we have a snow day of course : - ) I could work on a sketch based on what you two discussed for a paper” (December 8, A13, PBL2, Group 8).
A14 wrote, “That is fine about removing cognitive methods I only put them there to help you understand my logic : ). Thanks for your assistance” (December 3, A14, PBL2, Group 5).

One case was particularly intriguing and showed how American participants adopted emoticons in a semantically delicate manner. Apparently, in this message American participants adopted smiley emoticons to reduce the harsh tone even when they were evidently troubled by conflicted emotions and disappointments. One message best illustrates my argument:

TAO, KELLY AND I REALLY WANT YOU IN OUR GROUP SO PLEASE DON’T MISS THIS MEETING . . . . BECAUSE THIS IS A COLLABORTION, NONE OF US CAN TURN IN SOMETHING WITHOUT THE HELP AND INPUT OF THE WHOLE GROUP . . . . WE ARE REALLY LOOKING FORWARD TO SEEING YOU IN THE CHAT ON THURSDAY! : ) (December 4, A6, PBL 2, Group 9).

This was the only message written entirely in capital letters, which expressed an ultimatum, a desperate message urging Taiwanese peers to contribute to the group project more. Group members expressed anger and disappointment toward the Taiwanese participant because this member did not show up or contribute to the group. This American participant, although affected by anger and disappointment, still managed to show her courtesy by striving to reduce the harshness of her expression by using a smiley emoticon at the end of the message. As I have argued above, in comparison to Taiwanese
participants, American participants used emoticons to serve more sophisticated and complicated purposes, such as conveying implicit or explicit messages to their peers.

Finally, another noticeable feature was that regardless of country of origin, female participants used emoticons more than males. For instance, among American participants, five female participants using emoticons 10 times, while one male participant used emoticons just once during the entire online discussion process. In addition, female students, both Taiwanese and Americans, tended to adopt more emoticons belonging to the compliant and confirmative category than the embarrassment, disappointment or argumentation category. This may indicate that female participants may be more sensitive to, and thus more willing to maintain a positive relationship among group members by establishing a collaborative and reciprocal support atmosphere through expressing friendly attitudes and tones.

Nevertheless, one noteworthy exception is worthy of attention. Among all Taiwanese and American online learning participants, one Taiwanese male participant, T11, adopted emoticons with the highest frequency. He seemed to be highly adept in using various emotions, expressing emotions in different situations accordingly. Not surprisingly, most of his emoticons fell into the first category: compliant and confirmative. He also expressed his apprehension about group’s lagging behind by showing emoticons such as * __*///, @__@, and : ~~~ . T11 served as an elementary school English teacher in Taiwan and earned high TOEFL scores in English reading and writing. These factors may have implicitly contributed to his higher frequencies and dexterities in emoticon usages, and his language proficiency may have engendered his
higher frequency of emoticon usage. Taking Taiwanese participants’ TOEFL scores into consideration, I speculate that these claims are true; however, there were not enough data insufficient data precludes verification. Nevertheless, this is an issue worthy of further study.

**CMC Preference: Synchronous Versus Asynchronous Communication**

Taiwanese participants’ preferences for types of CMC were also influenced by language-related issues. In the current study, Taiwanese participants preferred implementing asynchronous over synchronous CMC. Based on the data gathered from the questionnaire for participants and the follow-up interview on Taiwanese participants, I concluded that synchronous communication, such as chat room or white board in English, may be a very stressful experience to Taiwanese participants.

Based on the interview data, I found that in WebCT, synchronous communication—talking and communicating with others—meant virtually one thing: typing. Predictably, Taiwanese participants’ English typing speed may be relatively slow as compared to their American peers. Furthermore, in online collaborative learning, slow and ineffective typing in English may imply lack of an ability to communicate in English with their American peers effectively and efficiently. As Taiwanese participants painstakingly strived to spot and press the correspondent English-letter key so that they could type in some words in the chat room, they may have discouragingly discovered that rapid-moving strings of conversation on the computer monitor were beyond their limited English ability to comprehend, catch up, and follow (T10, focus-group interview).
In addition, as nonnative speakers of English, Taiwanese participants with limited English proficiency surely need more time to contemplate appropriate words and sentence patterns to respond to their American peers; but in the synchronous communication mode, they simply have no time to do so. In a way, adopting the synchronous communication took its toll on Taiwanese participants—for it may have deprived them of their rights to join in the instant communication and make meaningful contributions the PBL group (T9, focus-group interview).

For instance, T15 stated in a message, “I type really slow in English” (December 7, T15, PBL 2, Group 3).

T9 stated, “I felt uncomfortable as soon as I needed to type in English to communicate with Americans. I typed extremely slow, word by word, and as soon as I finished my typing, I was not sure if my opinion was even noticed, even appreciated. . . . The only rewarding thing to me was that after practicing, now I did type faster in English” (T9, Focus group interview).

**Communication Patterns: Courtesy and Modesty**

Except for CMC preference, certain types of CMC were also found specific to Taiwanese participants. First, almost without exception, Taiwanese students initiated their messages with greetings and self-introductions. In their initial messages, they introduced themselves briefly or in detail to the rest of the group members. Seldom did they simply jump into the content of discussion and start working on the project. By contrast, most American participants tended to skip the introductions and worked directly on the PBL projects.
The following examples were extracted from several behaviorism discussion groups during the first assignment. When group members first met one another online, different patterns among Taiwanese and American participants were apparent in terms of how they initiated their first messages and discussion threads. In each pair of examples here, the first message was posted by an American participant and the second by a Taiwanese participant.

“I have taken a quick look at the assignment. Let me know when we are ready to get started” (September 30, A19, PBL1, Group 3b).

“Sorry, I am late. I am a Taiwanese doctoral graduate student of National Taiwan Normal University, majoring in special education (focus: gifted education). I have also read over the materials (Your School is Changing . . . is it right?) and start to think about the solution. I will try to get on the discussion board if necessary. . . . I will write my idea here at any time, if I have inspiration. Hope that you can understand (My English is not very good). If I have any misunderstanding to the discussion, please tell me directly. Thank you very much! I am very glad to participate in our discussion (October 4, T1, PBL1, Group 3b).

“I am posting this message to see if other group members are aware that we have been assigned PBL1. If so we should get started on it soon as it is due the 10 October” (September 27, A16, PBL 1, Group 1).

“It is great for me to meet all of you on this web! . . . I don’t know my opinion fit your discussions or not, so it’s good to respond to me! I HOPE I CAN CONTRIBUTE TO
Second, with regard to communication, Taiwanese participants tended to be more reserved, reticent, and nonassertive. They agreed with statements and opinions proposed by their American peers and seldom argued against or challenged other group members’ opinions. In addition, Taiwanese participants tended to adopt a courteous and moderate tone, placing excessive emphasis on Internet etiquette. Examples follow.

“I agree with you. I will look through Amanda’s class plan, and I will post it on the board” (December 4, T16, PBL2, Group 8). The 27 replies or posted messages of T16 included expressions related to agreement or compliance nine times at a rate of one in three, for example, “I agree with you”; ”It is really a very good experience to work with you”; or “I think they are both very good.”

Third, apart from Taiwanese participants’ Internet etiquette, they seemed to be sensitive to American peers’ responses or criticism. Probably because of their serious self-doubts about language and their low self-efficacy, Taiwanese participants tended to lack self-confidence in many aspects of online learning and were apprehensive about how competently they performed, how well they collaborated with their peers, and whether or not they were perceived as responsible partners. They apparently cared about all kinds of feedbacks from their American peers, encouragement as well as criticism. More likely to attribute problems with their online learning performance solely to themselves and intentionally attribute successes to others, Taiwanese participants constantly expressed gratitude and appreciation, referring to American peers’ assistance and contribution while
making apologies for lagging behind in the process and hampering the entire group’s progress and performance.

For instance, in Cognition Discussion Group 8, T16 said, “sorry” to her American peers seven times in her 27 messages, which reached a ratio of 1:4. For example, “I am sorry that I don’t know what is AIM”; “I will hand it by 6th or 7th. Sorry. I cannot work in these days”; and “I just came back from my camping trip. Sorry for being late. . . . My English is quite poor, please help me correct the plan, if there is any mistake I made.”

T4 also fit into this CMC patterns. During the study, she was the most active and diligent Taiwanese participant. She was not proficient in English, based on her TOEFL scores; nevertheless, out of 228 messages posted by the Taiwanese participants, she contributed 59 messages, nearly one third of them. In addition, she read 1,744 online discussion messages, which was the highest among all Taiwanese participants; the second highest number of messages read by Taiwanese participant was 541.

Even such a devoted participant with a remarkable performance still expressed her apprehension and concerns frequently. She made profuse apologies to her American peers, perceiving herself as an irresponsible figure of failure. She worried that the perception of her unsatisfactory performance would influence the collective impression of Taiwanese participants as a whole; therefore, she wrote the following two online messages.

First,

Julie and Christine, I am really sorry for my absence from attendance at your discussion (especially in the last weekend), and I really try to do something to
catch up on you later. Last night, there is really something wrong in the internet and then I couldn’t post and add attachments. . . . maybe both of you are disappointed and discontented with me. I am really sorry. Hope this won’t create the horns effect when you get along with Taiwanese students. (December 6, T4, PBL2, Group 7)

Second,

I appreciate you help and encourage. I really want to do more as much as I can, but I need more time. . . . I really thank you and appreciate for your comyributiom and hard work. About my former absentance in the discussion, I really feel sorry. If we still have time to do something before Fri, I will do as much as possible. December 6, T4, PBL2, Group 7)

Why Taiwanese participants were so sensitive to the way other participants perceived them, why they were reluctant to confront their peers, are why they apologized even when they did not need to, including when they made no mistakes, are covered below.

**Perseverance: Intrinsic and Extrinsic Factors**

In this study, one of the most noticeable phenomena among Taiwanese participants was their absence and premature withdrawal from the online collaboration process. Thus, I was motivated to study what made some Taiwanese participants persevere throughout the online collaborative learning process and some, withdraw.

As shown in Table 1, Taiwanese participants spent less time logged in, reading, responding to online messages, and interacting with American peers. Merely 11
Taiwanese participants could be considered “active,” and five participants, after logging onto WebCT a couple of times, simply disappeared without notice. Consequently, the rest of group members, who were almost all Americans, were annoyed because of their Taiwanese counterparts’ absence and withdrawal. Making the situation worse, they withdrew, intentionally ignoring the disappointment and criticism expressed by their peers without responding or explaining their actions.

Various factors came into play as some Taiwanese participants persevered throughout the online collaborative learning process but others withdrew. At first, I argued that language-related challenges could have dramatic impact on Taiwanese participants’ online collaborative learning performance. In addition, perhaps online collaborative learning itself is a process inevitably laden with challenges. Participants unable to cope with stress efficiently and effectively were highly unlikely to prevail. Consequently, confronting challenges, some Taiwanese participants adopted the most dysfunctional coping mechanism: avoidance and withdraw.

In addition, the various motivations of American and Taiwanese participants for taking part in collaborative learning generated different consequences as well. In the current study, Taiwanese participants, as volunteers, were not required to take and finish the current online course to earn credits. They were not bound by the same requirements set up by the course instructor for American participants. For instance, in this current study Taiwanese participants were not required to take each unit quiz and complete it as the prerequisite to proceed to online course discussion. Besides, they were not under any compulsory obligation to take part in this online course and persevere to complete this
study. In some respects Taiwanese participants were more like online learning “volunteers,” merely “testing the temperature” (T9, focus-group interview) of the online learning waters with the typical fight-or-flight mentality.

American participants, nevertheless, were placed in an entirely different situation. They were obligated and committed to complete this course to earn required credits; therefore, they had to follow and meet a series of instructors’ strict and rigorous requirements to complete this online learning course. For instance, unlike Taiwanese participants, in order to prove their mastery over the content knowledge on learning theory, American participants had to pass each unit quiz first at their own pace so as to be allowed to be assigned into certain PBL online collaboration groups.

In terms of psychologists’ definitions of motivation, American participants in this current study may be driven by extrinsic motivation, such as earning credits to fulfill the course requirements; on the contrary, Taiwanese participants may have taken part in this online collaboration process as a result of intrinsic motivations, such as self-fulfillment. Because Taiwanese students volunteered to participate in this project, they were supposed to be a group of self-directed learners possessing more intrinsic motivation as well as an interest in learning (Deci & Ryan, 1995). According to most learning experts’ predictions, they should have performed, in every aspect, better than their American peers in this online collaboration course; yet American participants’ performance might have been inferior to that of the Taiwanese if viewed from the perspective of motivation because American participants were not self-regulated learners. They were driven only somewhat by extrinsic motivation because their main
goal was to earn course credits eventually, no matter whether they “enjoyed” the online collaborative learning course or not.

To my surprise, the data revealed that my prediction was incorrect. Compared to American participants, Taiwanese participants simply lacked commitment to this course. They were not only likely to withdraw prematurely from the online learning discussion, but some of them were also passive, inactive, and reticent, remaining unengaged throughout the online discussion process. Furthermore, Taiwanese participants seldom led the online discussion; rarely did they post messages or compose messages with substantial and constructive contents. Taiwanese participants’ disproportional performance may reveal that even if driven by intrinsic motivation, which has been commonly regarded as the key factor to productive collaboration and self-directed learning by plenty of researchers, Taiwanese participants’ below-par performance was contradictory to researchers’ expectations.

However, if some conditions could be met, a couple of exceptional cases emerged. Taiwanese students performed dramatically better under the condition that another Taiwanese student was placed in the same PBL group. For some reason, both of them emerged as relatively active in the online learning process. In this particular scenario, these two Taiwanese students developed a complicated relationship as both partners and competitors. Under the Eastern cultural framework, realizing that their lagging behind would be considered by American peers to be inferior to other Taiwanese members, those individuals strived to keep pace with other Taiwanese group members.
As a result, both Taiwanese participants placed in the same group became active, responding and replying more to each other’s as well as their American peers’ messages.

The descriptive statistics for PBL 2, Group 7, in which these two Taiwanese participants, T 1 and T4 were placed revealed an intriguing fact: Both performed relatively evenly, with one’s message writing-to-reading ratio 1:30, and the other’s, 1:42. Such a result was relatively rare as compared to other PBL groups, in which some Taiwanese participants were typically absent or withdrew early.

Apparently, as Taiwanese online learning participants perceived the presence of stress, no matter whether it derived from external contexts, such as strict course requirements or peer competition, or from internal motivation, such as feeling the sense of inferiority to others or bringing shame to the group, all factors catalyzed positive transition, facilitating Taiwanese participants exercise of positive coping strategies and perseverance. In other words, although Taiwanese participants had already equipped themselves with certain internal motivations as the prerequisite, external factors introduced and presented into the online learning context may work best to generate and boost Taiwanese participants’ more active and engaging online learning performance.

Actually, my claim was verified in my follow-up interview with some Taiwanese participants who persevered. I inquired why they persevered throughout the entire online collaborative learning process even though they were not formally required to do so by the course instructor. I found that Taiwanese participants who persevered throughout the entire online collaborative learning process shared several similar traits.
First, these resilient Taiwanese participants were constantly aware of the presence of stress, regardless of whether it was self-inflicted because of a sense of inferiority, shame, self-doubt over English proficiency; or actually imposed on them from external sources, such as meeting the PBL project deadline, resolving issues, such as fair division of collaborative labor, or problems related to PBL projects.

Second, while confronting challenges, these participants did not simply give up; instead, they seemed to possess mental resiliency, striving to confront the perceived presence of stress and figuring out feasible ways to deal with it. According to them, during the painstaking process of exercising various coping strategies to deal with challenges, they found ways to gear themselves up for the confusing nature of online collaborative learning.

Third, they emphasized that they could do their best only if they were encouraged to do so without fearing consequences, such as the failure of PBL projects or the impatient and disrespectful remarks from their peers.

One of the interviewees, T1, in the focus group also indicated that during the process of online learning, she gradually developed a “sense of control” or “self-pride” (T1, focus group interview). She knew she could eventually make it through even under the uncertain and unpredictable circumstances associated with online collaborative learning situation. In a focus group interview participant T15 (2006, focus group interview) mentioned that if he quit, he would feel ashamed of himself if he could not even compete with his Taiwanese peers who did not speak and write English as he did. He also mentioned that he would feel embarrassed if he bumped into me afterwards.
Taking all issues above into consideration, I inferred that while engaging in online learning activities, both intrinsic and extrinsic motivations played crucial roles in terms of determining learners’ online collaborative learning performance and perseverance as well as level of satisfaction. The presence of stress perceived by participants, regardless of origin in external or internal factors, seemed necessary. Especially for participants whose cultural norm is collectivism, peer pressure may have served as an effective facilitator to make them persevere as well as adopt proper coping strategies to deal with difficulties because the shame of failing to do so would be unbearable. Finally, they needed a supportive online learning environment in which they could enjoy bonding relationships with peers, learning from process of trial and error without fear of uncontrollable consequences.

**Other Impactful Factors: TOEFL and Cultural Knowledge**

Aside from factors illustrated above, such as participants’ internal and external motivation, I discovered that other factors were conducive to Taiwanese participants’ perseverance as well. The English proficiency of Taiwanese participants as measured by TOEFL reading and writing scores and to some extent their cultural knowledge also influenced their online learning performance.

First, data revealed that Taiwanese participants with higher English language capability as indicated by earning higher TOEFL scores in reading and writing were more likely to communicate and interact actively with other online learning group members. For example, based on Table 1, among Taiwanese participants, T11, an elementary school English teacher in Taiwan, had the highest TOEFL reading score, 74, compared to the
mean score of earned by Taiwanese participants in reading, 45. T11 also earned the highest rating for writing based on knowledge and experience in TOEFL, which was 4, compared to the mean score of overall Taiwanese participants earned in reading, 1.70. His online message writing (N=25) to reading (N=123) ratio was also the highest among Taiwanese participants, which reached 20, comparing to the second highest Taiwanese participant, which was 4.9, and the mean of reading-and-writing ratio among all Taiwanese participants, which was 3.09. In addition, his total number of logged-in online learning sessions reached 40, and his total time spent online reached 26.38 hours; in other words each time he logged in, he spent at least .68 hours (40 minutes) reading and posting messages online, which was the second highest among active Taiwanese online learning participants. Probably because of his English proficiency, he was the only Taiwanese participant capable of spending only 40 minutes on average in each session, and effectively and productively writing and reading online messages. Other Taiwanese participants’ online learning performance offered no comparison.

Although the data were extremely limited, Taiwanese participants’ TOEFL scores, regardless of whether in reading or writing, positively correlated with many aspects of their online collaborative learning performance and mental resiliency, such as (a) times of log-in sessions, (b) time spent in online discussion board, (c) number of online messages written, and (d) numbers of messages read. All four factors illustrated above positively correlated with Taiwanese participants’ English language proficiency, represented by reading and writing capabilities measured by TOEFL. For detailed information, refer to Table 1.
Second, as shown in Table 2, Taiwanese participants’ writing scores on the TOEFL positively correlated with all factors; among them, respectively, the three highest positive correlation coefficients were with (a) number of times logged into sessions ($r=.71$, $p< .05$), (b) time spent in online discussion board ($r=.60$, $p< .05$), then down to (c) number of online messages read ($r=.58$, $p< .05$) and finally, (d) number of messages write, with $r=.48$.

Third, Taiwanese participants’ reading scores in TOEFL also positively correlated with all four factors. Among them, respectively, the two highest correlation coefficients were with (a) times of log-in sessions, $r=.40$ and (b) time spent in online discussion board $r=.39$, followed by (c) numbers of online messages participants’ wrote, $r=.39$, and finally, (d) numbers of messages participants read, $r=.19$. In addition, their willingness to interact with peers by “putting thoughts into written words,” mainly measured by their message writing-to-reading ratio, also correlated with both their TOEFL writing and reading scores, especially writing scores.

These numeric results to some extent verified my argument that English language-related issues impacted Taiwanese participants during the entire process of online cross-cultural collaborative learning. Taiwanese participants’ self-doubt over their English language abilities may hamper their performance; as the data indicated, English proficiency impacted the number of times they logged in and how much time they spent on WebCT to engage in online collaborative learning with their American peers.

**English Proficiency: Necessary but Insufficient**
Nevertheless, the importance of participants’ English abilities must not be overemphasized. In fact, when all the correlation coefficients with regard to Taiwanese participants’ online learning performances and TOEFL scores were investigated, the data revealed an important insight. Table 2 shows that almost all strong positive correlation coefficients occurred among Taiwanese participants’ log in sessions, time spent, and message reading and message writing, which I defined as the reflection of Taiwanese participants’ mental resiliency and willingness to exercise problem-focused coping strategies to participate and engage in online learning. Because the sample size was extremely limited and therefore subject to various influences, I suggest that to some extent, Taiwanese participants’ mental resiliency and willingness to stay active during the online collaborative learning process outweigh their TOEFL English reading and writing capability.

In other words, Taiwanese participants’ English reading and writing capabilities may but most of the time may not be reflected in their productive online learning activities. In contrast, Taiwanese participants’ perseverance throughout the online collaborative learning process was attributed to their showing mental resiliency and exercising problem-focused coping strategies when engaging in online learning by continually reading and writing. The more times Taiwanese participants were willing to log into online learning sessions, the more time they wanted to spent online; and then they tended to read and write more messages.

Of course, correlations among factors do not imply any cause-and-effect relationship among them. Based on the numeric data collected from Taiwanese
participants’ TOEFL score and WebCT records, the best I can do is to infer that Taiwanese participants with higher TOEFL reading and writing percentile scores were not necessarily more engaged in online collaborative learning.

T5 serves as a good example. Although her TOEFL score fell into the 62\textsuperscript{nd} percentile in reading and the highest percentile in listening comprehension, which was the 85\textsuperscript{th}, and she received the highest score in writing (4 out of 5) among Taiwanese participants, she was not an active member during the entire process of online collaborative learning. She merely spent 15 hours and 40 minutes in total on WebCT. In each of her 100 log-in sessions, she only spent 9.6 minutes on average to read, write, and interact with online learning members. Participant like T5, although equipped with higher level English proficiency, ironically spent the lowest time interacting and collaborating with peers.

**Impact of Cultural Variables**

Except for the language ability factor, various culture-related variables also came into play. With regard to cultural factors, I discovered the following four themes in this study. In general, I found some Taiwanese participants (a) who were more aware of and sensitive to the culture-related issues, (b) who initiated culture-related issues more and expressed genuine interest and willingness to interact and discuss with American peers on these issues, (c) who addressed and responded appropriately to group members’ specific culture-related communication patterns or characteristics and generally performed better in terms of online collaborative learning than others. Furthermore, (d) Taiwanese participants who were capable of seizing the opportunity to contribute a non-Western
perspective to the PBL group discussion enjoyed a more productive and in-depth online discussion process than those who were not, which in turn, reciprocally benefited all participants coming from cross-cultural backgrounds. In other words, confronting culture-related issues, instead of shying away or withdrawing, those Taiwanese participants who were capable of taking advantage of their international position to provide non-Western and unconventional perspectives usually benefited the most. Not surprisingly, some of these specific traits mentioned above constituted the main constructs of problem-focused coping strategies and culture intelligence, which was discussed and elaborated in Chapter 2.

Some examples follow. For instance, PBL 2, Group 3 designed a lesson plan on American Civil War. T15, who surely lacked sufficient prior knowledge on this issue, still managed to propose a similar but controversial analogy based on his own cultural and political context in Taiwan, the one China policy, and to share this issue with his American group members. He did not withdraw from the online discussion process. Instead, he made use of his position properly as an international participant to provide a non-Western and unconventional perspective, which sparked a follow up as well as productive discussion among group members. T15’s American peers also expressed genuine support, encouraging him with understanding and providing instant responses. Not surprisingly, their discussion turned into a successful and productive one; and not only that—members in this PBL group became mutually supportive partners, sharing a very close cyber bond with one another. Here were examples.

In his messages, T15 stated:
Maybe you had heard about the one China policy, it is a huge conflict, and more emotional reacts in Taiwan. . . . I’m not on purpose to raise such a quarrel. But I think that to face such a discriminate history by different words, students will more understand, more empathy, to feel the pain of slavery, and to reflect or review that history. Maybe I had take a North view of such a history of US. In that process, it may raise much more emotion, some conflicts. But in such process, kids will learn that the word had many facets, and it is not just a simple tool to communicate with each other. It do express one’s emotion, belief, and finally it will affect one’s behavior. It is just personal opinion, and I’m not live in US, I think you and Scott will know the society better than me, and will make the right decision. (December 5, T15, PBL 2, Group 3)

Fantastic (I only had a brief moment to review, but this looks good). I'll work on formatting it like the others and post it mid-afternoon. I realize how difficult this must be for you, and I really appreciate the effort you’re putting in to work with us. I think our overall project is better as a result. (December 8, A22, PBL 2, Group 3)

“Thanks, Nolan, for your input. It really looks into the emotion that goes into the lesson, and, as we learned in chapter 16 in our text, emotional issues can really help students make stronger connections to the material” (December 8, A11, PBL 2, Group 3).

The second example was extracted from PBL 2, Group 7. Initially, because of the time difference and technological problems, such as Java, continuously emerging, both Taiwanese participants in this group had difficulty collaborating with their peers. As a
result, the two Taiwanese members showed signs of withdrawal, and they retreated from the process of online discussion for nearly two weeks. Fortunately, both of them eventually resumed their online collaboration with their American peers and enjoyed a productive online learning process. In fact, in the end, this group earned the second highest score in their PBL project. I aimed to determine what made these two Taiwanese participants about to give up resume the online discussion process.

I discovered that the answer may lie in these group members’ employing their knowledge of cultural intelligence. For instance, in this group, American participants seemed to be acutely aware of the different communication patterns to which Taiwanese participants were more accustomed: These were more recursive and nonlinear. Hence, they switched their communication patterns accordingly from an assertive and straightforward manner into a more indirect and euphemistic communication pattern by frequently making apologies as well as making encouraging statements courteously and frequently to their Taiwanese peer.

Besides, to echo Taiwanese participants’ unique communication patterns, American group members expressed warm, positive phrases with courteous tones, such as “thank you,” “you did a good job,” and “good luck,” up to eight times within four messages, which was uncommon in terms of American participants’ typical communication pattern. American participants also managed to address Taiwanese participants by name as well, even though typing exotic names was supposed to be a time-consuming process for them. Encouraged by warm and positive responses of their American peers, these two Taiwanese participants abandoned their passivity, taking the
responsibility to fulfill their cyber roles. Although their English proficiency was limited, they showed their dedication to the process by constantly revising final group projects to make them as perfect as possible, which in turn, garnered positive feedback from their American peers.

“Jin-Shiang . . . I made a couple of grammar changes. . . . Thanks everyone for all the hard work, you guys did great!” (December 8, A3, PBL 2, Group 7).

I really like what you have added to our project. If you look at the attachment on this post you will notice that I have changed some grammar and changed the type to black. . . . Julie did a great job with the earlier entries, however, I am not sure if she will be checking the posts again before Friday. She might be busy with finals. Thank you everyone for your contributions. (December 8, A23, PBL2, Group 7)

“This looks great. I really like the pictures for the past and future site. Thank-you” (December 8th, A23, PBL2, Group 7).

“Hi, guys, everything looks great. Sorry I didn’t comment sooner, I thought we were done with the project and it was going to be posted. . . The changes look good.” (December 8, A3, PBL 2, Group 7)

“Christine the format looks great. I say post it. Thanks everyone for working so hard on this project! It was nice working with all of you. Good luck with your finals.” (December 6, A3, PBL 2, Group 7)

As shown in Table 2, numeric data indicated that Taiwanese participants who were adept in exercising cultural knowledge as measured by CQ in this current study
were more likely to spend time to engage in online learning (r=.67, p<.05) and write more messages (r=.51) than those who were not so adept. I also discovered the correlation between Taiwanese participants’ CQ and their log-in sessions (r=.41) and message reading (r=.42). In other words, those Taiwanese participants who equipped themselves with certain important traits of cultural intelligence, such as mindfulness of the implicit differences in communication patterns and ability to respond to it accordingly, were more likely than the others to show mental resiliency and willingness to persevere throughout the online cross-cultural collaborative learning process.

The positive correlation between Taiwanese participants’ CQ and TOEFL scores were also found, with TOEFL writing, r=.56, and TOEFL reading, r=.45. Taiwanese participants with higher English capabilities, especially writing skills, may be more capable of transforming their language advantages into the cultural intelligence necessary to interact with American peers; however, because the cause-and-effect relationship cannot be inferred merely based on correlation coefficients, high TOEFL reading and writing scores did not guarantee participants would or could exercise cultural intelligence. As a result, even people with high language proficiency level were not necessarily willing to interact with people from other cultures. Their showing mental resiliency and exercising problem-focused coping strategies facilitate their acculturating themselves into the online collaborative learning context by constantly learning, coping, and interacting other group members.

These participants earned merely moderate TOEFL scores; however, their devotion to address and deal with culture-related issues was evident. For instance, T15
raised plenty of culture-related issues in his PBL discussion group. The descriptive statistics showed that compared to other Taiwanese participants, he earned only a moderate 3 out of 5 score on TOEFL writing; yet in the PBL groups he was placed into, he continually contributed cultural insights, raising his group members’ interests in reacting to and discussing them. As a result, the first PBL group T15 participated in (PBL 1, Group 1) earned 92, the second highest score among PBL behaviorism groups, and the second PBL group he participated in earned 96, the second highest as well.

Another example involved T4. In terms of TOEFL scores, she places only at the 54th percentile in reading, which was below the median of all Taiwanese participants’ TOEFL scores (TOEFL reading median=56). Nevertheless, she was the most diligent Taiwanese participant, devoting herself to online collaborative learning and showing strong interest and commitment to interacting with American peers online. She was mindful of cultural issues, reminding herself that she should respond to her American peers’ CMC patterns swiftly and surely for fear that an incompetent performance could bring shame to all Taiwanese participants.

She logged into 92 WebCT sessions, totaling 57 hours and 35 minutes in, the longest time spent compared to other Taiwanese participants. Her rate of message reading reached 1,735.0, the highest among Taiwanese participants, far beyond the average of the entire class, which was 876.651. Her discussion message sent rate was 59.0, also higher than the average of the entire class—39.9. The PBL 2 group she was assigned into earned 96, the second highest score.
What CQ scores may reveal. Examining both American and Taiwanese participants’ scores collected from cultural intelligence scale, I discovered several intriguing facts, which may reveal specific culture characteristics Taiwanese participants commonly shared. Notably, the higher overall CQ scores did not conclusively imply people are competent in the process of acculturation; however, people with high CQ scores tend to have more cultural knowledge, mindfulness of implicit cultural influences, and willingness to adopt a variety of skills to respond to as well as acculturate themselves into the novice setting. First of all, comparing the cultural intelligence scores of Taiwanese participants and American participants, I found no statistically significant differences between them as indicated by the unpaired two-independent sample $t$-test. $t(1,21) = -.006, P=.94$, with critical $t$ value $=\pm 2.07$. However, Taiwanese participants’ overall average CQ scores were higher than those of American participants.

Nevertheless, based on unpaired two-independent sample $t$-test, in several subfactors of the cultural intelligence scale, scores earned by Taiwanese participants and American participants were significantly different. For instance, in the subfactors of cultural intelligence, Taiwanese outperformed U.S. participants in the following subsets to statistically significant levels. They were, respectively, (a) making the transformation to nonverbal behaviors to convey proper meanings, $t(1,21)= -3.18, p=.00$, (b) lacking confidence in interacting with participants from cross-cultural backgrounds $t(1,21) = 2.07, p=.04$, (c) having knowledge of the arts of other cultures $t(1,21) = 2.44, p=.02$, and (d) altering facial expressions to convey meanings properly $t(1,21) = -2.08, p=.00$. Note that (e) keeping silence or reticent while not knowing how to communicate with others,
although the difference between American and Taiwanese participants, did not reach statistical significance; its t value -1.533 was very close to the left-tail t critical value, -1.185., with p value =.10.

Finally, the correlation between scores of Taiwanese participants’ CQ and two subsets of COPE, problem-focused and emotion-focused scores, were relatively equal, with r=.50 (CQ and COPE problem-focused coping strategies) and r=.42 (CQ and COPE emotion-focused coping strategies) (See Table 2). It suggested that how competently Taiwanese participants exercised their cultural intelligence related to how well they coped with challenges, no matter whether in a problem-focused manner or emotion-focused manner and vice versa.

Numeric data acquired from COPE and CQ scales suggested the following themes. First, American and Taiwanese participants were equally mindful of as well as attended to cultural issues implicitly underlying the CMC patterns. Second, however, the data suggest that Taiwanese participants performed better in terms of using nonverbal behaviors and altering facial expressions to convey meanings clearly, which may imply why Taiwanese participants preferred adopting nonverbal communication; for instance, emoticons or exercising Internet etiquette, such as greetings, to establish an atmosphere of cyber bonding, conveying their friendly attitudes to peers. Third, correlation coefficients between CQ and both subsets of COPE, problem-focused as well as emotion-focused coping strategies, were discovered among Taiwanese participants and may imply that while interacting with people from other cultures or encountering challenges in the novice situation, in order to exercise cultural intelligence, adopting both
problem-focused strategies and emotion-focused strategies was essential. With the progress of online collaborative learning, however, they gradually adopted problem-focused strategies to confront challenges; but they still needed a nonthreatening online learning environment full of supportive backups from peers to serve as the foundation.

To sum up, Taiwanese participants’ English language proficiency impacted their willingness to persevere, interact with peers, and cope with challenges; however, Taiwanese participants with higher TOEFL reading and writing scores did not necessarily perform better during the process of online collaborative learning. Taiwanese participants’ mental resiliency and exercising problem-focused coping strategies even bypassed the language proficiency factor, exerting more impacts on their online collaborative learning performance.

Furthermore, if accompanied by exercising proper cultural intelligence, Taiwanese participants’ online learning performance was more productive and rewarding. Not surprisingly, the capability of one’s exercising cultural intelligence correlated with participants’ mental resiliency, language capabilities and both problem- and emotion-focused coping strategies.

In the next section, I address reasons that emotion-focused coping strategies, conventionally regarded as ineffective even maladaptive, played such important parts in Taiwanese participants’ online collaborative learning performance.

**Fostering the Cyber-Bond**

CMC patterns between American and Taiwanese participants varied in many aspects. Unlike their American peers, Taiwanese participants appeared to be more
involved in establishing mutual connections and supportive relationships among group members by exercising various emotion-focused coping strategies, such as making self-revelation, emotion-sharing, and seeking emotional supports during the online collaborative learning process. This very process was generally regarded as the cultivation of the sense of community. Why they were drawn into investing their efforts to establish connections and relationships with peers instead of exclusively focusing on the problem itself and solving it as soon as possible in the online collaboration process is a matter of interest.

In the current study, the data revealed that at least in the beginning phase of online collaborative learning, Taiwanese participants tended to exercise emotion-focused coping strategies to establish connections, or cyber bonds, among group members. For instance, they seldom jumped into the work directly; instead, they typically initiated online discussion by revealing themselves, sharing their educational backgrounds, professions, and hobbies, to show Internet etiquette and express friendliness.

For example, in a Taiwanese participant’s message extracted from PBL Group 1b, T15 introduced himself and his family members to his American peers in detail although he had not been asked to do so by his group members. From time to time, he revealed more information about himself and his family, such as his two children, managing to connect more with his group members. He also addressed his partners by name at the beginning of his message, very often to express friendly tone.
He wrote, “I have 2 boys, one is 4.5 and the other is 1.5, and they always take the most free time of me. And the different time between USA and Taiwan also form the barrier” (September 1, T15, PBL1, Group 1b).

“Dear Scott, . . . I am not a primary or secondary school teacher. I majored in psychology, social psychology. I teached(sic) in college, the course include human relationship, social psychology, Educational & psychological testing.’ (November 29, T15, PBL 2, Group 3).

“Dear Steve, . . . I have two boys, maybe I can learning some secrets from you and apply some to my sons” (November 30, T15, PBL2, Group 3).

Dear Scott, . . . I do appreciate to have such a chance to learn from you. And it is a fantastic experience. . . . I am told that this course will end at December, maybe we can e-mail by personal address. . . . I like to watch sports game, such as NBA, MLB. . . , and, can you believe that my sons, I and half and 4 and half, will excited and wow~~~~. (December 9, T15, PBL2, Group 3)

Second, except for making self-revelation, Taiwanese participants seemed to be prone to make emotion-sharing and seeking emotional supports as well. For instance, they may mention how much they worried about the PBL group’s “slow progress,” or they may share their feelings about their lives on a daily basis, such as updating their own family lives, discussing sports preferences. Constantly bothered by self-doubt in English and lack of self-efficacy in dealing with online learning challenges, Taiwanese participants seemed never say to “sorry” enough or apologize enough to their American peers. For instance, in all 228 messages written by Taiwanese participants, 46 messages
contained phrases, words, or emoticons expressing apprehension, apologies, or self-doubts, revealing how eager Taiwanese participants were to establish the cyber bond of mutually emotional supports by sharing feelings and emotions with their American peers.

For example, the participant T11 wrote:

I am Lin from Taiwan. I didn't see any new messages on this web for three days, so I wonder I missed anything or not. Or I missed another web for discussing? I know the deadline, so I HAVE A LITTLE ANXIETY.~~~~~ *_*///. (October 26, T11, PBL 1 Group 7)

T4 wrote, “Julie and Christine: I am really sorry for my absence from attendance at your discussion (specially in the last weekend), and I really try to do something to catch up on you later” (December 3, T4, PBL 2, Group 7).

Finally, Taiwanese participants who were willing to self-reveal and share emotion received more instant and positive feedback from the rest of group members. In the PBL groups they belonged to, the mutual bond and supportive connection among group members was strong and conducive to the success of online collaborative learning. Nonetheless, I also founded that the strong cyber bond among group members did not decisively contribute to the PBL group’s productive and quality online performance because other factors affected their online collaborative learning performance.

In the focus group interview, Taiwanese interviewees indicated that while assigned to these certain PBL groups with strong cyber bonds, they felt comfortable and satisfied with the entire online collaborative learning process (T16, focus-group interview). By contrast, Taiwanese participants placed in these certain PBL groups that
were less congenial felt intense pressure of peers to some degree, and they were less satisfied with experiences of the online learning process.

I furthermore discovered that Taiwanese participants’ cyber bond-building behaviors served as situational purpose instead of intrinsic value. In other words, Taiwanese participants were not involved in the online collaborative learning process merely seeking emotional supports or comfort from American group members. To them, being socially active, showing friendly attitude, and collaborative Internet etiquette was culturally appropriate, a prerequisite to initiate the work with their peers as they confronted challenges. They were taught to be more mentally prepared first by establishing supportive networks among group members in order to tackle challenges collectively (T3, focus-group interview). If they failed to do so, Taiwanese participants may feel anxious and uneasy during the process of online learning, which to some extent, hampered their devotion and willingness to make productive contributions online.

In fact, numeric scores Taiwanese participants obtained from the COPE scale reflected their emotion-sharing and self-revelation behaviors as well. Taiwanese participants obtained significant higher mean scores than their American peers on the COPE scale with regard to emotion-focused coping strategies. In the COPE scale, items showing emotion-focused coping strategies were, respectively item (10) “restraining myself from doing things too quickly,” with \( t (1, 19) = -2.24, p = .03 \); item (11) “feeling and emotional-sharing,” with \( t (1, 19) = -2.83, p = .01 \); item (23) “seeking for emotional supports,” \( t (1, 15) = -2.40, p = .05 \); and item (52) “I talk with someone about how I felt,” \( t (1, 23) = -2.4, p = .02 \).
Summary of Online Collaborative Learning Behaviors:

Taiwanese Participants

After addressing various unique themes emerging from Taiwanese participants’ online collaborative learning process, I have synthesized all factors in the following section.

First, I cannot emphasize enough that Taiwanese participants’ self-doubt over English ability engendered most of the challenges they confronted during the online cross-cultural collaborative learning process. Second, in confronting challenges, surely Taiwanese participants adopted a wide range of coping strategies to deal with them. Unfortunately, some withdrew from the collaborative learning process, engaging in the most maladaptive coping strategy. Others persevering throughout the online learning process tended to adopt various strategies to cope with challenges, such as adopting high frequencies of emoticon usage, using a nonconfrontational and even compliant communication patterns to establish cyber bonds and supportive networks, or constantly self-revealing and sharing emotions. If carelessly interpreted without putting cultural context into consideration, the strategies Taiwanese participants adopted may be deemed ineffective because they were categorized as emotion-focused coping mechanisms; however, exercising these emotion-focused coping strategies was beneficial because they were raised in Eastern culture. To them, these strategies served as the situational purpose
to establish psychological readiness and mental resilience to confront and tackle emerging challenges.

Third, predictably, on a superficial level the English proficiency of the Taiwanese impacted their overall online collaborative learning performance and level of mental resiliency, measured by their WebCT Vista log-in sessions, time spent on the online learning platform, message reading, message writing, and the message writing-to-reading ratio.

To the Taiwanese participants their English capability was never sufficient. Compared to other variables, such as their mental resiliency and showing willingness as well as perseverance to participate and engage in online collaborative learning, the data revealed that Taiwanese participants’ English proficiency did not play a particularly important role. In other words, determination, willingness, and perseverance to wrestle with challenges to “stay alive” during the process of online collaborative learning, which were measured by times logged in, time spent on the online learning platform, and times of their reading and writing messages, served as key factors contributing to their online collaborative productivity.

Fourth, during the process of Taiwanese participants’ engaging in online collaborative learning, their coping mechanisms were gradually transformed, moving from the emotion-focused mode to a more problem-focused and goal-oriented one. Meanwhile, even driven by the intrinsic motivation of learning, Taiwanese participants still needed pressure imposed from external environment to propel them to persevere. Those who were able to respond effectively and accordingly to external stresses imposed
on them, such as Taiwanese peers’ competition, American peers’ expectations, or pressure of meeting project deadline, were more likely to persevere.

Fifth, culture-related factors, such as one’s culture intelligence, may not be the primary factor contributing to the effectiveness of Taiwanese participants’ online cross-cultural collaborative learning; nevertheless, these factors still brought certain impacts. For instance, Taiwanese participants’ cultural intelligence scores positively correlated to both their COPE problem-focused and emotion-focused subset scores, suggesting how effectively Taiwanese participants’ adopting certain coping strategies to deal with challenges was related to how competently they could exercise cultural intelligence. For instance, CQ revealed that compared to their American peers, Taiwanese participants were more prone to use nonverbal behaviors to convey meanings. In addition, they were more reticent and restrained while interacting with novice people or a novice environment; however, if Taiwanese participants perceived their particular communication patterns, presence, opinions, and contributions were valued and respected by their American peers, this perception may serve as an encouraging inspiration, making their transition from emotional-focused to problem-focused coping mechanism more swift and sure, which in turn, facilitated their online learning performance and fortified their mental resiliency. They also earned reciprocal appreciation from group members and thus shared mutual understandings. In the end, it became a win–win situation, and all group members from cross-cultural backgrounds benefited from this rewarding and productive online cross-cultural collaborative learning experience.
Patterns Found Among All Online Learning Participants

Americans Versus Taiwanese: CMC Patterns Differ

While analyzing CMC patterns, I discovered differences between American and Taiwanese participants’ communication patterns. These emerged during the initial launch of online discussion, and several themes surfaced.

First, American participants experienced different issues and challenges in terms of online collaborative learning, and their responses to online learning situations varied radically from those of Taiwanese participants. As native English speakers, American participants did not have language-related difficulties or apprehensions. During the initial phase of the online discussion, most American participants seemed concern more about issues, which I coded as “technical or procedure,” instead of working on establishing connections with group members. They placed emphases on figuring out how and in what measure to conduct the online learning more effectively, including issues relating to how to assign group members’ labors properly or what kinds of online learning tools they could utilize to facilitate communication among group members. In other words, they were concerned about problems and measures they could employ to counteract them.

Second, at least superficially, even if they may have no choice but to work with a group of newly acquainted, non-English speaking partners online, American participants seemed relatively relaxed and easy-going when interacting with people from non-Western cultures. In their first message, some briefly greeted other group members; however, they rarely introduced themselves with personal detail or exchanged than
obligatory social niceties. Usually, they simply thrust themselves into working on the project.

Third, during the online collaborative learning process, American participants were in general more problem-focused, organization-oriented, and goal-driven. For instance, while working on PBL projects, they often began by setting the collective goal, clarifying the due date of the project and the requirements of the instructor, and then arranging probable group meeting times in advance. They sometimes set up chat time for all participants to clarify confusion and misunderstanding on PBL assignments as soon as possible by requesting that every participant bring in prepared topics to facilitate discussion.

Fourth, American participants in general, collectively shared a sense of urgency to complete tasks, perceiving certain levels of stress or crisis imposed on them. American online learning participants were driven by external motivation; they had no choice but to take this required online collaborative learning course to earn course credits. Under the stress of meeting the PBL project’s deadline within a very limited timeframe, from time to time, they reminded one another how little time was left for them to finish the project; and they monitored the progress of their project continuously. In order to respond to and cope with various stressful and confusing online learning situations, they engaged in figuring out how to propel the group on the right track and avoid derailment. The shared sense of urgency during online discussion prevented American participants from indulging in excess chat. When they occasionally engaged in social talk, it rarely took place merely for its own sake; on the contrary, it served as an emotional buffer, a
psychologically relaxing space for them to redirect group members’ cognitive capabilities to the problem-solving mode.

Finally, when communicating with peers online, American participants were in general, more assertive and responsive but not too confrontational. While communicating with peers, unlike Taiwanese participants who tended to make frequent apologies or show reluctance to express challenging opinions, American participants expressed their opinions more straightforwardly.

Numeric data verified my argument. Based on the unpaired two-tailed two-independent sample $t$-test in CQ scale, compared to their American peers, Taiwanese participants showed significant tendencies toward the following items: to (a) get advice from friends and relatives, $t = (1, 15) = -2.37, p = .02$; (b) to discuss feelings with someone, $t (1, 19) = -2.83, p = .00$; (c) to get emotional support or sympathy from friends and relatives, $t (1,17) = -2.33 ,p = .03$; (d) to get advice from someone to determine what to do, $t(1, 23) = -2.37, p = .02$; (e) to see things in a different light, $t (1, 23) = -2.17, p = .04$; (f) to talk to someone who could do something concrete about the problem $t (1, 23) = -2.18$, $p = .03$; (g) to look for something good in what is happening, $t (1,23) = -2.53, p = .01$; (h) to wait for the right time to do something, $t (1,23) = -2.54, p = .01$; (i) to laugh about the situation, $t (1,15) = -2.95, 0 = .00$; (j) to talk to someone about how I feel, $t(1,23)=-2.4$, $p = .02$; and (k) to restrain myself from working too quickly, $t(1, 19)=2.24, p = .03$.

**Initiators of Online Discussion Threads**

Except for the difference in terms of CMC communication patterns, the initiators of online discussion varied as well. For instance, participants whom I coded as
prospective leaders in the current study were group members who always initiated the first message on the online discussion board. Some notable features of these leaders impacted the collaborative online learning.

First, no Taiwanese participant served the cyber role of online discussion initiator, no matter what TOEFL scores these Taiwanese participants previously earned or what their COPE or Cultural Intelligence scores were. Without exception, the first message was invariably posted by American participants for all PBL online discussions boards.

Second, the data revealed that in general, these prospective leaders shared a number of characteristics. They were usually people “throwing out” the first message to seek responses. In their messages, they constantly addressed and assessed the current online learning situation (e.g., reminding group members that the project due date was around the corner or that they did not have too much time left to waste). They set up a broad framework for enhancing group discussion, such as figuring out who, when, and how to execute the online discussion. Finally, they sought input or comments from the rest of the PBL group members, synthesizing and integrating them, preparing to launch the next phase of online learning.

Third, prospective leaders usually zeroed in on the point directly; namely, they were all goal-oriented and project-focused people. They usually focused on the project as soon as they were assigned to a certain PBL group. Instead of engaging themselves in building up the connection among group members after launching the online discussion, they collected information with regard to each participant’s professional and knowledge background in order to delineate each participant’s responsibility practically and properly.
All of the strategies exercised above indicated these prospective leaders were implementing goal-oriented and problem-focused coping mentalities.

Fourth, these prospective leaders apparently had a faith in the old adage “Actions speak louder than words.” They seldom initiated online discussion without following up, fading away, and leaving peers behind. They automatically accepted the responsibility, if not fully, at least partially as a responsible and morale-building leader to monitor and facilitate the entire process of the group project. They also strived to solve emerging problems while the PBL group confronted difficulties. From time to time, these prospective leaders encouraged the rest of the group members to keep going and not give in to frustration. The data indicated that these leaders persevered—in fact, *not a single* online discussion initiator withdrew from the online discussion process or became inactive. Finally, these leaders usually also played a role as assignment closers on the online learning discussion board. In general, they were the last participants remaining active and responsive on the discussion board when the PBL assignments were submitted and the PBL projects were completed.

My claim is supported with numeric data obtained from COPE and CQ scales. Taiwanese participants tended to adopt emotion-focused coping strategies, but American participants more goal-oriented and problem-focused. These unique characteristics were also reflected in scores they obtained on these two psychometric scales. In the COPE scale, American participants obtained higher mean scores in subsets related to active and problem-focused coping strategies, such as “thinking how they could best handle problems as soon as possible” (COPE, Item 39) or “putting aside other activities in order
to concentrate on problems” (COPE, Item 55). In other words, American participants preferred to play the role as active “doers” and “problem-solvers” without showing hesitation and intimidation.

On the contrary, although Taiwanese participants still showed tendencies toward problem-solving, they seemed to prefer cultivating certain inner and psychological traits, such as practicing concentration, focus, and delayed gratification, and seeking the right time and occasion to deal with problems. Based on the COPE scale, the data suggested that Taiwanese participants emphasized the following: “get emotional supports from others while dealing with challenges” (COPE, Item 23), “used plenty of cognition-reappraisal skills to “see the reality in different light” (COPE, Item 29), exercising “focus and concentration” (COPE, Item 33), and “wait until the right moment to be sure not “to make matters worse by acting too soon” (COPE, Item 41).

**Cyber Role Emerged as Well as Evolved**

In terms of collaboration, under the ideal situation, no matter what unpredictable situation they were in, online group members should be able to collaborate with one another throughout the online collaborative learning process. They should work, act, and think “as a group” collectively.

Nevertheless, in reality, groups would include members who lagged behind for many reasons. For instance, these participants may not be too technology-savvy or may have been raised in different cultural backgrounds and not fluent in English; they may lack sufficient prior knowledge to proceed in online collaborative learning effectively. As a result, participants as a group may need to make proper decisions on how and when to
switch cyber roles or divide the labor if one or two members are incapable of fulfilling their mission. By contrast, if participants as a collaborative group failed to recognize and handle this issue flexibly and properly, they ultimately had an unsatisfactory and frustrating online collaborative learning experience, which surely affected their online collaborative performance.

During the collaborative problem-solving process, certain cyber roles emerged. These roles kept evolving and developing throughout the online discussion. I coded these emerging and evolving cyber roles as follows: (a) prospective leaders (e.g., organizing, planning, contributing, reflecting and monitoring the group progress, and encouraging social interaction), (b) prospective organizers (project-doers, transforming members’ input into practical and presentable materials) and (c) active group members (constantly contributing to and seeking input).

Prospective leaders were in general those who initiated the discussion thread. They were responsive to group members’ various needs, and they automatically took the responsibility to lead and organize the PBL group as well. No Taiwanese participant in this study took this role as the PBL group leader; in all PBL groups, American participants served exclusively as group leaders.

The organizers were doers. Unlike leaders, they were not too concerned about the overall project; however, they automatically took the most responsibility to make things happen, putting various innovative thoughts, ideas, and opinions into tangible words and projects. Specifically, they were group of people who closely followed the groups’ collective decisions and tried to synthesize concepts and opinions into organized
products. In the current study, only a small number of Taiwanese participants tried to serve as organizers in their respective PBL groups; nevertheless, they were not always successful because their limited English proficiency. Most of the time, though encouraged by American peers, their hard work was not genuinely and fully appreciated because the many English semantic or grammatical mistakes Taiwanese participants made in the PBL project necessitated additional editing, which wasted American participants’ precious time and diverted their attention from the PBL project itself.

Finally, active group members were those people who took part in and occasionally made contributions throughout the online collaboration process. Taiwanese participants generally fell into this category, remaining somewhat active, occasionally posting messages to respond to peers’ requests; however, they may be considered devoted to online collaborative learning. By contrast, probably because they were driven by strict course requirements, all American online learning participants in the current study could at least be considered active, contributing members to some degree.

I discovered that cyber roles continued to evolve throughout the process of online collaborative learning. For instance, if necessary, prospective leaders implicitly transformed themselves into organizers and vice versa. In some worst-case scenarios, however, if certain individual’s contributions were not recognized or valued, active members may gradually turn into reticent and inactive ones, which unfortunately, was the case with some Taiwanese participants.

Besides, in those PBL groups earning high PBL scores, cyber roles were flexible and evolved throughout the online collaborative learning process until the end of the
course. In those PBL groups, if prospective leaders could not handle and respond to emerging problems, someone in the group would automatically step in and take over whatever position was needed most for the success of group members. By contrast, in those underachieving PBL groups, participants’ cyber-roles were rigid and static. In these groups, participants seemed self-confined in certain functions without the flexibility to switch roles. In some situations they sensed the need to assume responsibility and take appropriate measures, but no members showed willingness to step in to serve as cyber leaders or organizers. They merely provided lip service instead of actually taking responsibility to act.

The following messages may best illustrate characteristics prospective leaders possessed. For instance, in the very first PBL behaviorism post, A16 said, “I am posting this message to see if my other group members are aware that we have been assigned PBL 1. If so, we should get started on it soon as it is due the 10 of October. Hope to hear from you soon” (October 1, A16, PBL 1, Group 1)

The first message of PBL Group 2 was as follows: “I just looked at our first PBL assignment and was wondering when and how you would like to work on it. Perhaps we could all read it over the weekend and try to post our ideas by early next week. . . . It would be good to get a jump start on this before things get crazy. . . .” (September 22, A11, PBL 1, Group 2).

In Behaviorism PBL Group 5, A2 initiated the post in this way: “I agree that we need to get busy and start working on the project”; and she even listed a series of outlines addressing of what knowledge base teachers needed to know and master in the first
message. Then, in the last section of her message, she proposed that “why not the group each other come up with a list of things we need to know and post it on the discussion board for the class and we look at them all and decide what parts are important with that we can . . . lead to the completion of the project” (October 3, A2, PBL, 1 Group 5).

Challenges: Procedure, Technology, Time Management, and Fair Division of Labor

I indicated that online cross-cultural collaborative learning may be a challenging process; in particular some factors challenged all online learning group members, no matter whether they were American or Taiwanese participants.

Based on the data collected from focus group interview, the questionnaire on participants’ online learning self-efficacy, challenges, and expectations as well as the contents of their online discussion, challenges could be categorized as follows:

(a) procedural and technological problems, (b) time-management issues, and (c) the untimely withdrawal: the disappointing experience of online collaborative learning.

Procedural problems comprised a variety of challenges related to how systematic procedures, measures, or strategies should be executed by participants in order to facilitate the online collaboration effectively and smoothly. Technology-related problems were miscellaneous problems, especially with regard to online learning platforms, such as Java and browser regulation, Internet connection, PC or laptop hardware or software flaws and bugs, incompatibility between certain software, just to name a few. In the following section, the procedural problems are presented first, then, technology-related problems. In the following section, I discuss and elaborate technological problems first.
Technological issues. For both Taiwanese and American participants, especially those lacking sufficient online learning experience, how to deal with technology-related problems was the first barrier they had to work out and overcome as the PBL groups initiated their projects and online discussion. Not surprisingly, most PBL group members repeatedly mentioned that they struggled throughout the entire online learning process to familiarize themselves with WebCT, the online learning platform adopted in the current study.

Issues I coded as “online learning platform-related” problems quickly emerged. Online learning platforms, such as WebCT and similar online learning platforms, purport to be the advanced cognitive tool to enhance learners’ in-depth critical thinking. Because of complicated functions, predesigned and embedded within WebCT, group members unfamiliar with it, yet required to utilize it, as the primary online learning platform in a limited timeframe suffered from unpredictable and frustrating problems. Exploring complicated functions was not an easy task, let alone making the most of them with dexterity.

Although PBL group members sensed the need for more time online to interact synchronously with other group members to clarify issues and settle disagreements, implementing synchronous communication functions provided by WebCT, such as chat room or whiteboards, became a favorable option. Actually, the data showed that all PBL groups in the current study, without exception, had strived to implement various synchronous communications to compensate for the gap asynchronous communication could not close. Unfortunately, these efforts always ended in failure. The most troubling
technological problem regarding synchronous communication was the “notorious” Java version regulation, unfortunately the prerequisite for activating any synchronous communication tools in the WebCT Vista platform. Constantly regulating and updating versions of Java become one of the major obstacles of implementing the synchronous communication.

Based on my own experience, regulating and adjusting Java to run WebCT smoothly were never easy. Documents could not be uploaded and downloaded, and instant chat room could not be launched if Java could not pass the browser check first. As a result, I spent many hours meticulously reading instructions, performing preparatory work, such as regulating sets of cookies and the encoded levels of Internet, merely to pass the browser check instead of working on the PBL project itself.

The ineffectiveness of Java caused synchronous functions, such chat room and white board, to elicit the most criticism and complaints. For instance, one participant posted that “the problem is I cannot access my WebCT because of Java. Things have been messed up in terms of computer use for me, but hopefully, I will figure it out” (September 28, A11, PBL 1, Group1). This kind of situation often resulted in participants giving up their attempts to use the WebCT synchronous function to work on the PBL project. He then replied, “I don’t think I will need the WebCT to work on the project, though. If I do, I may just have to ask you guys what I am missing form that site” (September 28, A11, PBL 1, Group 1).

Because the online learning participants relied heavily on an early version of Java and slow dial-up Internet connection in this study, unpredictable lags and malfunctions
occurred very often. A typical example of frustrating synchronous communication involved a string of messages produced by members of PBL Behaviorism Group 8. This group was very close to the final phase of completing the first PBL assignment; however, the frustrating synchronous communication experience took its toll on this group. They could not log in because of various problems associated with Java. Thus, they could not launch the chat room. Finally, they gave up using the chat-room function, returning to the more reliable but old-fashioned asynchronous communication measures, such as online discussion boards or email.

I am trying to log on to the chat room however it will not allow me to post anything. Anyone having this problem? It is about 5:00 and no one has logged into the chat room from what I can see. . . . We may need to just work through the discussion board. Are we going to be able to finish by October 31 or do we need more time? (October 27, A5, PBL 1, Group 8)

“Well, . . . is it now 6:15 and we haven’t been successful at communicating” (October 27, A21, PBL 1, Group 8).

I cannot log on to the chatroom and post anything, too. Maybe there is something wrong with my home’s computer Java I think it is workable to discuss our PBL program here or through E-mail, and I think we need more time. (October 27, T5, PBL 1, Group 8)

“I cannot attach the files earlier. Is there any problems?” (October 17, T4, PBL 1, Group 5)
“I can attach with no problem at home, but at school, I cannot, maybe it is the firewall. Anyway, I don’t mind at all if you just post the information and tell me where it goes” (October 17, A23, PBL 1, Group 5).

“Do I need to do something else? I’m sorry I am clicking on everything, but a chat board is not popping up” (November 6, A4, PBL 1, Group 9).

Aside from Java, several other technology-related problems arose. Participants were lost in the large volume of messages, files, documents, and group discussion and often posted messages in the wrong place. Some participants went into the wrong online discussion section; consequently, they did not receive the instructor’s email instructions or messages posted on the board. Others even collaborated with PBL groups to which they did not belong for an extended period of time without being aware of it. Their computers or laptops were infected with computer viruses during the online collaborative learning process. Some Taiwanese participants, including me, discovered that software written in English, such as WebCT, was incompatible with the Chinese version of Microsoft Office Word. Consequently, after using WebCT, Chinese fonts disappeared or became unidentifiable. Some Taiwanese participants cited difficulties understanding instructions written in English, such as Java and browser regulations; therefore, they hesitated to download or upload certain software written in English (e.g., Java) to their PCs for fear that it would clash with their existing Chinese Office System.

**Challenges intertwined.** I discovered that technological problems often intertwined with procedure-related challenges, further complicating online collaborative learning. For example, some PBL group members had no idea which group they were in
or whether they should collaborate once the project was begun. As a result, they did not
connect with the PBL group members they were supposed to collaborate with and earned
no PBL scores but received severe criticism from group members. Although this kind of
problem with regard to collaboration procedures was not supposed to happen, to my
surprise, it occurred repeatedly. The following messages illustrate the situation.

“Ann, you are not a part of this group. . . . When you have completed the quiz for
chapter 6 successfully, I will place you in a group” (PBL 1, A2, Group 1, discussion).

“Sorry for not to online for a long time. Because I don’t exactly know where Dr.
Was want me to be in” (PBL 1, A15, Group 1, discussion).

“Sorry for the late start, I checked in way back when I first got the email about
which group I was in, no one was here yet, then I lost track of time” (PBL 2, A9, Group
9, discussion).

In the following worst-case scenario, one participant seemed to miss the entire
process of online collaboration. She did not join any PBL group until the very end of the
first PBL project completion, which was one month after the project launched, because of
her confusion over the course instructor’s information. In her message she stated, “I am
assigned to group 9, too. I will get busy right away” (November 11, A21, PBL 1, Group
9). Nevertheless, the project of PBL Group 9 had already been completed and submitted.
Then, she got the following embarrassing response from the rest PBL 9 group members:

“Kelly, our group has already completed this project and submitted it. . . . I am
really sorry—Good Luck” (November 12, A2, PBL1, Group 9).
These kinds of procedure-related problems, which were supposed to be minor and easily solved, were in fact intertwined and resulted in the collaborative procedural problems. For instance, because of limited English language proficiency, Taiwanese participants perhaps failed to fully understand course instructions; consequently, they may not have been able to follow the instruction and respond accordingly. Disorientation and confusion throughout the online learning process were the result. Because of a variety of limitations in the current study, such as participants’ geographical divide and time differences, no course briefing was held in advance of the project. Consequently, the course information could be delivered only through the asynchronous communication held solely via the online platform through email or discussion board. Technological problems, such as malfunctioning synchronous communication, hampered participants’ fully and instantly grasping the situation and responding to it, causing their confusion and disorientation during the online collaborative learning process.

As the following WebCT screenshot, Figure 1, indicated that 52.42% of the total sessions participants took part in were discussion boards. It implies that the major online collaborative learning activities occurring in the current study were accomplished via asynchronous communication. Surely, they tried to use synchronous CMC, such as chat room or white board to communicate, but these constituted only 2% of total sessions, even lower than their use of email, which was 3.04% (See Figure 1).

**Time management issues.** Challenges online learning participants continually encountered, especially those from cross-cultural and multinational backgrounds, resulted from time-management problems. Except for technological and procedural issues, time
management issues came into play, making online cross-cultural collaborative learning more complex and unpredictable.

How time management issues impacted online cross-cultural collaborative learning manifested as follows: Participants in the current study were all adults in graduate level education, implying that participants had to use precious time to participate in online learning. In addition, the geographical divide and limitations left online learners with no other options but to collaborate with one another solely online to complete projects for this study. Surely, under this situation, time management became a
pivotal issue. Participants had to determine when and in what way their precious time should be invested in a most effective and efficient manner.

Thanks to the online learning platform, online learning participants from multiple cultural and national backgrounds could virtually interact in vivo. As a result, participants may not have sensed that they were actually working with people “overseas” until they encountered time-difference problems. To my surprise, a couple of American participants in the current study were unaware of the time difference between them and their overseas partners from Taiwan. (A 12-hour-time difference separates American Eastern time and Taiwan’s Pacific time.) This difference comprised part of the time management problem, if not all.

For instance, one month after the online learning project had launched, a frustrated American participant posted a message because she could not find a proper time to “get together” with her partners to work out some project confusion; surprised, she said, “I didn’t know about the 12 hour time difference in Taiwan until last Thursday. I am sorry!” (October 22, A1, PBL1, Group 3). Interestingly, the lack of awareness of the time difference happened not because American participants were unaware of it, which was highly unlikely, but they may not have realized that they were actually not interacting with a group of international students studying and residing in US. Instead, they were collaborating with Taiwanese participants residing in Taiwan.

In contrast, Taiwanese participants were more aware of the time difference and addressed the problem as soon as they collaborated with American PBL partners. They mentioned this issue throughout the online collaboration process and understood that the
time difference may have caused the communication barrier between them and their American peers. For instance, in the focus group, participant T8 told me that except for language issues,

time difference is one of the obstacles when I try to interact with American peers. After school, the only free time available for me is at early night, when is very early morning in the U.S and all my American group members are not online at that time. Our group members want to set a chat time for us to join together—and it is just not possible. (T8, focus-group interview)

The seemingly minor issue surrounding time difference impacted the collaborative learning process because it was intertwined with other challenges to learning. For instance, in both successful and disappointing experiences, all PBL group members showed the intention to adopt synchronous communication to implement the online collaboration. Doing so was advantageous because under various circumstances participants needed to clarify misconceptions and confusion instantly or request immediate input from other group members in order to reach group consensus to resume the PBL project correctly. In fact, synchronous communication was the reason the current study was designed. Participants from different cultural backgrounds and nations in this study were encouraged and required to figure out and try a wide range of online communication strategies as well as CMC tools to collaborate with one another.

Nevertheless, because of the time difference, implementing synchronous CMC, although it was supposed to be the most effective mode for online cross-cultural collaboration, turned into a frustrating and challenging task. In the current study, the 12-
hour time difference virtually eliminated the opportunity for PBL group members residing on opposite sides of the Pacific Ocean to find a time to get together virtually to converse back and forth instantly. Even if a single PBL group had only four members, for all of them to be online at the same time was still very difficult; chatting and interacting with one another frequently became impossible. Consequently, in the current study the data indicated that online learning participants collaborated with one another most often in an asynchronous CMC mode (See Figures 1 and 2). They interacted via messages posted on the discussion board or email.

The numeric data in the Figure 2, Tool Usage Report (2) indicated that all members of online collaborative learning groups logged into chat room sessions 567 times and spent three hours and 51 minutes in these sessions, which constituted 2.80% of the total use of all online learning tools. By comparison, participants’ email use constituted nearly 5% of the total use of online learning tools, with two hours and 36 minutes spent on it.

In addition, the graphic feature of the Figure 2, Tool Usage Report (2), shown below, demonstrated the frequency of tool usage from highest to lowest: (a) discussion board, which constituted over 55% of online participants’ tool usage time (b) assessment (28.58%), (c) organizer (7%), (d) mail (3.04%), and (e) chat (2.80%). They also worked on content files (1.45%) from time to time because they had to upload or download documents as attachments to fulfill the requirement of PBL assignments.
They also checked (a) assignments (0.90%), (b) who is online (0.82%), and (c) grades (0.86%). Participants in this study also preferred mailing (asynchronous communication) to chat (synchronous communication).

Facing technological challenges can easily result in confusion, frustration, mistrust, and even anger among group members. Unpleasant experiences associated with
the ineffectiveness of synchronous communication may also have led to early withdrawal. I discovered that once participant made excuses and repeatedly implied that they might not be able to access the online discussion board on the regular basis because of tight schedules: These participants tended to withdraw prematurely, giving up online learning completely.

For example, A18, who withdrew from the online learning process by making statements like the following: “Since I have dial-up internet, have never been in a chat room, and have an irregular schedule. . . . Aside from that I don’t have any other times that I can really commit to” (October 16, A 18, PBL 3, Group 2). This participant remained inactive online and eventually withdrew from the learning process.

**Shifting the burden.** One of the pivotal factors contributing to a successful online collaboration was the flexibility of cyber roles. In the ideal online collaborative learning situation, group members share workloads as equally as possible; thus they could competently fulfill their own responsibilities without suffering from too much pressure. Members not only play their own roles effectively but also compensate for one another’s shortcomings. Unfortunately, such was not the case in the current study. Because of Taiwanese participants’ premature withdrawal, the responsibility for completing the PBL project was placed solely on American participants, which surely caused serious consequences.

For instance, in the first PBL behaviorism assignment, one or two Taiwanese participants withdrew from online learning in three of the eight PBL groups. Consequently, American participants in these groups had no choice but to finish PBL
assignments on their own without receiving input or comments from their Taiwanese peers. Each PBL assignment, which was originally designed to be completed within a one-month period by four or five group members from different cultural backgrounds, turned into a solitaire-like assignment exclusively completed by American participants. This experience was undoubtedly unsatisfactory and frustrating for them.

For instance, in PBL Behaviorism Group 6, two Taiwanese participants were absent throughout the PBL discussion, and two American participants were left to complete the assignment. During the three-month-period online learning course, T8, for example, logged into WebCT only once, spending merely 41 minutes in total in a one-day period and then completely disappeared. Lai’s first log in and post were also this last log in and post as well. As a result of two Taiwanese participants’ absence, the two American participants left in PBL Group 6 spent tremendous amounts of time (individually 112 hours and 69 hours), compared to the 23 hours course average spent in accomplishing the PBL assignment. Furthermore, they respectively read 2,546 and 736 messages in the discussion boards, constituting over 10% of the total number of messages read (n=33,086 messages) by the entire course. Nevertheless, even though such tremendous effort and time had been invested by two diligent American members—the outcome was unsatisfactory. The PBL score they earned fell in the 85th percentile, below the average score earned on PBL Assignment 1, which fell in the 87th percentile; their score was even below the median 90th percentile. Apparently, the disproportionate division of labor took a tremendous toll on this group.
My argument is illustrated in the post below. Particularly noteworthy are T8’s communication pattern and the signs he showed of his probable early withdrawal.

Well, firstly, I wanna to apologize to you guys for my delay, sorry. I am Lai, and I am a intern (teacher) in the elementary school, and that’s why I almost have no time to join your work. And now, I will try my best to catch on you. So if you wanna to chat on the internet, plase tell me that i can be more familiar about our work faster. (October 22, T8, PBL 1, Group 6)

In T8’s group, American members expressed their disappointment about two “lost” Taiwanese members but in a covert and implicit manner. Ultimately, even the instructor noticed the situation and made several apologies for the absence of Taiwanese group members to American group members.

“I am kind of concern that there hasn’t been more participation to-date. I was online last night hoping to be able to chat a bit about the next few steps, but nobody from our group was shown as available” (October 25, A6, PBL1,Group 6).

Chien-Chih and Sinn please feel free to contribute as well. . . . The more input the better this project's final form will be. . . . I really hope that our other two participants will join us for a final review and some suggestions (I'll wait to post the documents until we've finished with the PPT). (PBL1, October 22, A6, Group 6)

From the instructor, he wrote, “I apologize that the interaction with the Taiwanese students did not work as well as I had hoped” (PBL1, October 26, course instructor, Group 6).
“There were certainly some coordination issues with physical time restrictions at play. It was nice to read some of the Taiwanese posts from some of the other discussion groups” (PBL1, October 29, A21, Group 6).

The second case involves Behaviorism PBL Group 9. Compared to PBL Group 6 cited above, this group was apparently in a better situation. Although Taiwanese participants who were assigned to this group never showed up, three American members remained active in the group. Ultimately, they scored in the 90th percentile of PBL scores, that is, just above the average of the entire class; they also met the median score the entire online learning class earned.

Comparing these two PBL groups, I discovered that online participants’ abrupt withdrawal from the process caused more unsatisfactory and devastating consequences in the collaboration group than those participants who never showed up at all. In the former situation, the rest of group members were left clueless, bewildered about whether the missing group member would resume activities and contribute again or not. Consequently, the pace of their online collaborative learning was hindered; their goal was diverted because they did not know whether anything valuable was forthcoming from the missing member.

We may ask whether the unfavorable phenomenon of Taiwanese participants’ premature withdrawal improved with the second PBL project assignment. Unfortunately, the answer seemed to be no. The situation with the second PBL assignment improved because five Taiwanese participants (of 16) were already inactive in the online
collaborative learning course. As a result, on the second cognition PBL assignment, out of eight groups, four of them had no Taiwanese involvement or participation.

What happened in Group 5 in the second PBL assignment illustrates the situation well. Taiwanese participants assigned to this group never showed up. As a result, from the initiation to the completion of the project, only two American participants worked on the PBL project on their own. Surely, they experienced frustration and disappointment with their Taiwanese peers for their failure to contribute anything to the collaboration. Nevertheless, to my surprise, American participants in this PBL group not only completed the project but they also earned a perfect PBL score (PBL score=98), the highest score among all cognition PBL groups. They were very successful; however, they were a rare example of an online learning collaboration group without any cross-cultural perspectives involved.

Limited data prevented me from drawing any conclusion about reasons that this group performed so well with only two American members and no Taiwanese participants. The data suggest that under this very stressful situation, these two participants never became distracted but were extremely involved in mutual interaction in positive and productive ways. Based on the quantitative data, the total amount of time these two American participants dedicated to the online course was relatively proportional: 85 hours and 34 hours. Furthermore, in terms of online message writing and reading, the performance of these two American participants was above the course average as well. For instance, A19 joined discussion sessions 202 times, read messages 9,798 times, and posted messages 96 times, compared with the course average:
discussion sessions 122 times, reading discussion messages 233 times, and posting 25 messages.

**Viewing the Big Picture: All Factors Mattered**

The primary purpose of adopting GT research methodology is to discover probable connections among emerging phenomena, and synthesize these emerging categories into a convincing theory. To realize this goal, certain single factors or variables, for instance, technology issues only, cannot provide a holistic picture in terms of online cross-cultural collaborative learning. In other words, without considering dynamics among various variables, the true phenomenon of online learning could not be authentically depicted. In the current study, all factors associated with online learning challenges were intertwined; the failure of certain factors or members caused chain-reaction consequences, leading to the collapse of the entire online collaborative learning groups.

A typical example illustrates intertwined online learning challenges, such as Taiwanese participants’ avoidance of synchronous and preference for asynchronous CMC. From the psycholinguistic standpoint while interacting with American peers in English, Taiwanese needed extra time to retrieve targeted information from their loosely structured English-language mental schema, within which limited culture knowledge was embedded. This cumbersome information-retrieving process rendered Taiwanese participants incapable of responding to their American peers instantly and efficiently, placing psychological and cognitive burdens on Taiwanese participants as well. All of these psycholinguistic and technology preference factors required them to invest time,
show mental resiliency, and exercise sophisticated coping strategies to deal with emerging online learning challenges.

Except for the view from the perspective of psycholinguistics, Taiwanese participants’ preference for asynchronous CMC could also be interpreted from the perspective of technology. Taiwanese participants used different keyboards, on which Chinese characters and English alphabets were juxtaposed in one single key. As they typed in English, this layout confused Taiwanese learners, especially those accustomed to Chinese character typing format. Consequently, while engaging in synchronous or asynchronous CMC solely through English typing, Taiwanese participants were slow and ineffective in terms of communication.

Another example involved technology-related challenges, such as the awkward Java and browser regulation process, actually worsened the procedural challenges of collaboration, which in turn made time-management issues more complicated and difficult. These unsolved issues then shook the foundation of the cyber bond among group members, eventually causing participants’ premature withdrawal, absence, and disproportional labor division.

Here the patterns repeatedly emerged. Online learning challenges were complicated and intertwined, and it was highly unlikely these challenges could be easily addressed, targeted, or and resolved in a clear-cut and compartmentalized manner. Trying to view emerging challenges from an interactive and holistic perspective helped online instructors and learners, especially those from cross-cultural backgrounds, grow more aware of the sophisticated online learning situation they were in. It thus assisted them
figuring out which strategy was appropriate to adapt themselves mentally and practically in the online collaborative learning situation.

**Factors Conducive to Effective Online Cross-Cultural Collaborative Learning**

Certain factors contribute to or hamper successful online collaboration, especially when participants from cross-cultural backgrounds are involved. This section focuses on (a) factors conducive to a successful or frustrating online collaborative learning; (b) factors significantly contributing to a meaningful and productive online learning; and (c) factors online learners should avoid for fear of making the online collaborative learning experience devastating and frustrating.

In the current study, each PBL group’s final project scores were assessed and graded by the course instructor, and every PBL group member’s online learning activities and performance were both recorded automatically in detail by the data tracking system on WebCT Vista; therefore, I could trace, retrieve, and analyze recorded data.

The assessment of the effectiveness or failure of the online collaboration in this study was based on two sources: (a) numeric data, which was the final PBL project score assigned by the course instructor, and (b) supporting qualitative data, which were participants’ online learning messages analyzed with the GT content analysis procedure. Several examples and probable factors contributing to successful and productive PBL group collaboration appear below, followed by a comparison of successful PBL groups to underachieving ones to verify my arguments.
Effective PBL Groups: Mental Resiliency and Problem-Focused Coping Strategies

As with most PBL online learning groups, members of effective PBL groups felt confused as they encountered a variety of online learning challenges. Nevertheless, some features distinguish them from underachieving PBL groups. Overall, effective PBL groups were collectively able to come up with effective but flexible collaboration strategies, exercising them persistently, realizing their goals with their best efforts without being distracted or mired in trivial details.

First, effective PBL groups shared a psychological trait that I termed “mental resiliency accompanied by problem-coping strategies.” They shared this trait collectively because members of these PBL groups were aware of the online learning situation in which they were placed, constantly assessing pros and cons of various coping strategies they used; furthermore, they actively responded to online learning situations surely and swiftly.

Second, members of these PBL groups never gave up. Confronting challenges, they managed to stay alive and to find effective ways to thrive. They transformed this kind of mental resiliency into action-oriented strategies. For instance, during the PBL project learning process, they spent plenty of time discussing contents pertaining to the PBL topic itself instead of online learning preparatory issues, and they seldom paid superficial lip service. They genuinely contributed to their own PBL groups by doing something substantial and practical.

Third, they showed flexibility. Constantly switching strategies and maintaining mindfulness about whether these strategies really worked, they effectively counteracted
as well as solved both collaboration procedure-related issues, such as assigning fair labor division or time-management, and technology-related issues, for instance, Java and chat room. If they discovered certain methods were ineffective in terms of solving the problems, they quickly switched to another strategy. If they found someone more competent in playing certain cyber roles, that person automatically stepped in and take the position.

Fourth, effective PBL groups shared a collective mindset: a commonly-shared vision, targeting the goal of accomplishing tasks as effectively as possible. They seemed constantly to sense the pressure of the assignment deadline; as a result, they frequently reminded one another that the assignment due date rapidly approached and they, as a unified group, had to implement something effective soon to deal with it.

Fifth, they were relatively culture-savvy, which reflected on their appropriate choice of PBL topics. Instead of choosing topics that were culturally specific or unsuitable for participants’ backgrounds, topics they chose were generally culturally inclusive and inviting; and members of these effective PBL groups, no matter whether they were American or Taiwanese, showed genuine interest and devotion to interacting with one another.

Finally, all efforts effective PBL groups made generated a rewarding by-product: the cyber bond. They gradually established mutual trust and reciprocally supportive relationships during the process of online collaboration, and based on that trust, they persevered by exercising problem-focused coping strategies to deal with challenges.
In the second PBL assignment, Three PBL groups (of eight) earned the PBL scores from the highest to the third place in order. PBL2 Group 5 is the first example. Specific factors contributed to this PBL group’s effective online collaboration. Throughout the course of online collaboration, members (all females) in PBL Group 5 kept referring to and reminding one another about scant resources and limited time. Mindful of this situation, they figured out how to make use of time effectively and efficiently from the very beginning of their online learning collaboration as shown in their postings.

“I am getting nervous about the due date for this assignment” (November 25, A 19, PBL 2, Group 5).

“I hope I am not rushing you, but I just want to get started and begin making progress. The topic is not so important to me. Thanks for responding so quickly” (November 28, A 19, PBL 2, Group 5).

“This is a crazy point in the semester! I am hoping to start chipping away at this each day this week. . . . This is due on Monday which worries me, but I think once we get going, we can have it finished in no time at all” (November 28, A 14, PBL 2, Group 5).

Compared to PBL2 Group 5, Group 3, comprising all males, drew a vivid analogy to their PBL assignment, calling it “a pain in the butt.” It was then predictable that they would try very hard to “remove” this pain “in their butts” as soon as possible. Similarly, this group also shared a sense of awareness about the situation they were in. Instead of being stuck and remaining inactive, they constantly adjusted by updating their strategies.
During the process of online collaboration, they gradually bonded with one another and became good partners. For instance, after the course had completed for nearly a month, members in this PBL group still logged into WebCT and exchanged greetings with one another at Christmas.

The last example is of PBL2, Group 7. Members in this group selected the Olympic Games as the topic for the group project, and they executed their project quickly and efficiently. They began by relating various curriculum design theories to principles of cognition and offered reciprocal supports to all members, collectively claiming they would “go forward and practice the Olympic spirit” (November 22, T1, PBL2, Group 7). In addition, members in this group, both Taiwanese and American, were actively devoted and involved in online collaborative interaction and discussion. Specifically, in this PBL group were 2 Taiwanese females. Surprisingly, both of them contributed substantially to the very end of the project, which was extremely rare in this current study. Encountering technological obstacles, this PBL group strived to adopt both synchronous and asynchronous communication to make their interaction clearer and more concise so as to complete their project. Finally, back and forth, members in this group threw out and provided feedback with substantial and meaningful contents, and they did not shy away from the collaborative responsibilities each member should assume. For instance, even though two Taiwanese female participants’ language proficiency may not have been competent enough to finish the PBL project on their own, they still confronted the challenge and volunteered to accept the mission. Within the process, these two Taiwanese participants received plenty of unconditional support, such as grammar
checking and correction of typographical errors, provided by their American peers.

Toward the end of the course, the American leader said, “Thank-you everyone for your hard work on this project” and “thank you to everyone for your contribution” (December 6, T1, PBL2, Group 7).

Simple numeric data and descriptive statistics also revealed similar facts. For instance, while counting the interval—from the first message these effective PBL groups posted on the discussion board to the day they actually launched to deal with the PBL collaborative project, such as throwing out different ideas, reflecting on and revising group members’ opinions, and dividing collaborative labors—it took these groups only seven to 10 days on average. By contrast, underachieving PBL groups took up to 17 days on average to launch the online collaboration; thus, the difference between effective and underachieving PBL groups became patently evident.

An interesting fact, based on the WebCT data, was that the most active day for all the PBL groups in this study, was December 5, which was the deadline for submitting PBL projects. Thus, even to the last moment, plenty of PBL groups were still in the midst of working on their assignments. Under these circumstances, some underachieving PBL groups may actually have completed assignments with little enthusiasm in one or two days.

**Underachieving PBL Groups: Failure to Make Transitions**

By contrast, what made some PBL groups ineffective and unproductive was not necessarily a lack of a sense of urgency or a lack of commitment to online collaborative learning. In fact, most of the time, they were all committed and devoted online learners;
however, somehow they simply failed to transmit their emotional concerns into more practical or goal-focused measures, hampering their attempts to move forward. Although similar to effective PBL groups, members of these underachieving PBL groups sensed the imperative to complete the PBL project assignment on time; they failed to transmit this unproductive apprehension into exercising the exercise of problem-focused strategies. In a way, they procrastinated and remained inactive until the very last moment—the project due day. Viewing from the perspective of utilizing coping strategies, underachieving PBL groups were mired in an emotionally conflicted state—they failed to transmit an intensively emotion-focused status into more practical and goal-oriented, problem-focused coping strategies.

PBL 2 Group 6, which unfortunately earned the poorest score in terms of the online collaborative project illustrates my argument. Their first message appeared in November 8, and in it one of the group members suggested that they select the target audience and subject area and launch the PBL assignment, reminding the group that “this assignment is due on Dec 5. I think this point we can begin to work on some minor details before starting the assignment” (November 8, A8, PBL2, Group 6).

The response to this message did not appear until November 13, one week later. To my surprise, their third message appeared November 27, nearly 20 days after the first message. During this period of time, not a single message was posted on the discussion board. Even in their third message, they were still dealing with the issue mentioned in the first message and did not move forward. Three weeks after the first message, this group had not even started the PBL project. In comparison with what had been
completed and done by other PBL groups in the same timeframe, this group started the project too late; and their execution of online collaborative learning was completely ineffective.

One group member sensed their ineffectiveness in terms of online learning, and she mentioned of the situation with apprehension: “*We really need to start having discussions.* Would it be safe to assume that all of us will be able to start next weekend after Thanksgiving? Just let me know!!” (November 20, A8, PBL 2, Group 6).

Nevertheless, her apprehension ended here without being transformed into practical actions. Subsequent responses from other group members, such as the following, appeared three and seven days later. “OK! I will get back in these days. Thank you for your suggestions~” (November 23, T11, PBL2, Group 6), and “I am ready to begin” (November 27, A12, PBL2, Group 6). They eventually “started” their project on November 29, when they had only six days left to finish the assignment and submit it on December 5.

Surely, PBL group members coming from cross-cultural backgrounds to collaborate online and perform productively may be a difficult task; however, to be effective and productive, PBL groups had to meet several conditions. Based on the data illustrated, I am convinced that the major factor determining which PBL group performed most productively and effectively had to do with which PBL group could make the transition better—the transition from unproductive apprehension, emotion-laden concerns, and passive inertia to the positive attitude of showing mental resiliency accompanied with proper problem-focused coping strategies.
**Flexibility May Make a Difference**

The second factor contributing to effective PBL groups was flexibility in switching between contents of the PBL problem and collaboration procedure issues. Effective PBL groups focused primarily on discussing the PBL problems itself, such as clarifying what the real problem was and where to seek resources available to deal with it; however, to make their collaborative learning progress run smoothly, they were able to shift their focus swiftly to discussing collaboration procedure-related issues, if necessary. For instance, they might try to figure out how to deal with Java problems or who should be responsible for submitting the first draft and who should work on the last one. They made this transition for one purpose: to assist them in returning to the right track, which was PBL problem discussion, without wasting too much time in handling trivial preparatory work.

The following discussion thread illustrates the typical behavior of effective PBL groups. In this discussion thread, note that members put their focus primarily on the goal of discovering the solution to the PBL problem (content of the problem) and simultaneously working on ways they could reach the goal more effectively, such as by assigning collaborative labor division or determining what kinds of tools or CMC to use (collaboration procedures). Also note that they sensed the urgency of the need to finish the assignment and managed to transmit this apprehension into immediate action. In fact, these two messages were posted consecutively on the same day. The first message follows.
Do you feel comfortable crating lessons in these areas? For example, we could write lessons on a specific time period such as WWII. . . . Then in these lessons we can tie these cognition concepts. If you would like since I know the content I can write the lesson ad you can write the analysis paper? Let me know what you would like to do to divide the work and is there anyone else in our group?

(November 27, A14, PBL 2, Group 5)

The message posted above got instant feedback from peers, occurring at the very same day.

Rosaria, I know this is a crazy point in the semester!! I am hoping to start chipping away at this each day this week. . . . I have no preference. Social studies is not my strong point, but if you are more familiar with that I can certainly work with anything. My only other suggestion would to do something with an overall weather related theme. . . . we could work it into Social Studies by assigning reading on a particular history lesson as you mentioned. (November 27, T19, PBL2, Group 5)

The next discussion thread was extracted from PBL Cognition Group 7, which earned the second highest PBL score. Note that these four group members, who were two female American students and two female Taiwanese students, concentrated primarily on working on the PBL problem itself. They sent substantial messages back and forth, continued to interact, and even argued with one another to figure out what content or subject areas were more applicable to demonstrate cognition principles related to the PBL problems. Note, however, that members in this group had simultaneously
divided labor, assumed their own cyber roles (as leaders or organizers), and fulfilled their own tasks.

The first message follows.

I have been giving some thought to an interdisciplinary unit and trying to remember ones that my school in IL used . . . for example, here are some of the IDUs (interdisciplinary units) I have worked with in the past. Olympics . . . time has gotten away from me today, so I will try to get back to this later today with more ideas. (November 21, T22, PBL2, Discussion Group 7)

The second message follows.

Thanks Christine for your sharing and laying out the initial patterns. . . . I think the IDU “Olympics” will be a great idea. It let me remember the Parallel Curriculum Model (PCM). . . . If any one get some ideas or different thinking or question, please feel free to let me know at any time. Thank you very much!! Wish we could go forward and practice the Olympic spirit. (November 22, T3, PBL2, Group 7)

The message above was answered as follows.

Susan, Thank-you for the website. . . . from your message it sounds if you like the Olympics IDU. If we don’t hear back from our other group member then lets go ahead and use it as our theme. That way we can divide up the subjects and set lesson plan for each. This could be done individually and then we could present them to the group for further suggestions. just a suggestion to get the ball
rolling. How about we give her until Mon. evening to respond. . . . (November 22, T22, PBL2, Group 7)

“I agree with Susan and Christine” (November 29, T3, Cognition Discussion Group 7).

As far as I can tell, we are going to base the lesson plans on the Parallel Curriculum Model. Is there any particular area you want me to focus on? Here are some things I have thought of this so far. . . . I was thinking a good converse to the subject Social Studies would be an applied science, such as Science. . . . I thought we could break it down into smaller terms, since this is what you would do with lesson plans anyway, and work with life science. . . . (November 25, T3, PBL2, Discussion Group 7)

Furthermore, in terms of their CMC patterns, each group member seemed to be quite straightforward and candid in expressing thoughts and opinions. For instance, two American participants interacted with each other so ardently that each of them even posted two- to three-page messages, which never happened in other PBL groups. Besides, these two American participants not only set the high standard for themselves, they kept pushing (although it was done implicitly) the other group members, two Taiwanese participants, to contribute further to this project.

For instance, one of the group members wrote the following message. “Hopefully the other two group members will post before tomorrow,” and “I hope we hear from our other team members sometime this weekend. It looks as though there are 4 of us in the
In one message, an American participant overtly expressed her disappointment toward her Taiwanese teammates,

> Julie, you certain have made a large contribution to the project. As for our other team members I am disappointed that we haven’t heard from them recently; Susan had some great ideas in the beginning. It would have been nice to get their viewpoints on the topic. (December 4, T22, PBL2, Discussion Group 7)

Apparently, the direct approach worked, resulting the return of the two Taiwanese participants who had disappeared and were inactive for quite a long time. They rejoined the group and resumed online discussion as soon as that “disappointment” message appeared; furthermore, they received assistance from American participants on grammar checking and the corrections of typographical errors as they finished their projects in English. Eventually, each group member was grateful for everyone’s contribution, and this PBL group earned a high PBL project score.

After describing factors conducive to the effective PBL groups, as the contrast, what follows is a review of the discussion threads extracted from some underachieving PBL groups. PBL 2, Group 8 demonstrates the argument.

First, this PBL group took nearly two entire weeks to deal with preparatory issues (e.g., making self-introductions or determining what the PBL curriculum should be and what each member should do) instead of confronting the real problem—the contents of the PBL. Members in this group did not submit substantial ideas and thoughts; they merely “made comments on other members’ comments” instead of taking the initiative to organize thoughts or ideas into feasible and practical elements of the project.
Second, no one in this group seemed to be willing to voluntarily act as the leader or organizer to “make things happen” until the very end of the course, when just 5 days remained to complete the project. In comparison with other PBL groups, the length of each and every online discussion message rarely exceeded three paragraphs and 200 words.

Finally, on December 5, the due date of the PBL project, this group was still working on very rough and undeveloped concepts. Even during the last week of the semester, they were still dealing with chat rooms problems (technological problems) and time management difficulties, such as tight schedule and time differences (procedure problems). Even when they finally agreed that each group member should take the responsibility to work on their own parts of the project, they were still somewhat careless. One group member even forgot which part of the project she was assigned to develop and work on.

Examples of this group’s PBL discussion threads follow. Notably, this discussion occurred merely one day before the December 5 due date.

“hey guys, I am sorry, this week was crazy and I completely forgot to check this discussion. Please let me know if we can meet this afternoon. I went into the chat room and you were not there” (December 4, A13, PBL2, Group 8).

“that’s no problem Amanda. I am not sure if Yang can meet then because of the time difference. . . . Yang had problems accessing the chat room” (December 4, A20, PBL2, Group 8).
“I think we can add 1. priming 2. Effective stimulus 3. selection and rehearsal in your class plan” (December 4, T16, cognition PBL Group 8).

“Sorry, I guess I already missed it” (December 5, T16, PBL2, Group 8).

“I didn’t hear anything back from you for a while so I signed off.” (December 4, A20, PBL 2 Group 8).

Sorry, I guess when I put my mind to something I tend to forget what I was doing in the first place. I posted lesson objectives and combined our lessons (kinda) I don’t see all of our material fitting into one class period so I split up the days.

(December 4, A13, PBL2 Group 8)

**Cultivation of the Cyber Bond**

The third factor conducive to a successful online collaboration may lie in the cultivation of the sense of community online or maintaining the cyber bond among group members. Similar to the situation of Taiwanese participants, cultivating the cyber bond was not the most decisive factor for an effective PBL group; however, it at least served as a covariance affecting the success of online collaborative learning.

PBL2, Group 4 serves as an example. Two female American participants had to work on the PBL project on their own because of the absence of Taiwanese participants in this group. Together sharing a sense of crisis, they heavily relied on each other to fulfill their roles to finish the project. Consequently, they devoted themselves to the PBL project diligently and were very mindful of the situation they were in, constantly figuring out what their next practical moves should be. Their intensive interaction with each other
produced a sense of community based on gradually established reciprocal support and encouragement.

Second, I discovered that not only did they substantially exchange opinions and concepts targeting the PBL project itself, but they also shared with each other stories of their personal lives and family members. As a result, they adopted the highest frequency of emotion and addressed each other by name frequently—rare in this study. Ironically, these two young American female students even shared the same given name. All factors noted above contributed to a sense of community, a cyber bond shared between them.

Their discussion thread follows.

“It should work, I have 19 month old daughter and it is easier for me to be on her after 8pm. I will be logged on but I am sure I will be running back and forth” (November 16, A5, PBL 2, Group 4)

Ann, . . . we have one person on our list who was in my last group. I wonder if she actually exit, because she never posted at all, not even to say hello. . . . congratulation on having a little girl. I am looking toward the future, specially at having kids starting sometime next year, so hearing that makes me smile. I am sure she is beautiful. What’s her name? Have a good night, talk to you soon, Ann. (November 17, A9, PBL2, Group 4)

“Oh yeah . . . and I have taken instructional design . . . lol : )” (November 17, A5, PBL 2, Group 4).
“Okay . . . I cannot add an attachment from here at work. I will have to do it at home. I will send it to you via email . . . if it works : )” (November 22, A9, PBL 2, Group 4).

By contrast, if unspoken tension and surging disappointment prevailed among group members, what such a PBL group would be like is demonstrated in PBL Cognition Group 9, one of the underachieving PBL groups. Notably, one of the group members posted a message in all capital letters as follows, which was the only such message in this online study.

TAO, KELLY AND I REALLY WANT YOU IN OUR GROUP SO PLEASE DON’T MISS THIS MEETING . . . BECAUSE THIS IS A COLLABORATION, NONE OF US CAN TURN IN SOMETHING WITHOUT THE HELP AND INPUT OF THE WHOLE GROUP. . . . WE ARE REALLY LOOKING FORWARD TO SEEING YOU IN THE CHAT ON THURSDAY! : ). (December 4, A1, PBL2, Group 9)

The content of this entire message revealed discontent and disappointment, rarely directed toward another group member, a Taiwanese female participant Tao, for withdrawing from the online collaboration process out of the blue, which left the entire group bewildered and extremely annoyed. After the message posted on December 4 until the end of the online learning course on December 9, this Taiwanese participant never showed up or responded to the group in any way.

As a result, below is another message showing annoyance, complaint, and discontent about this frustrating collaborative online learning experience.
Tao, Kelly and I had to submit the project without you because you never came for the chats. . . . Because you didn’t participate in making the actual project, we concerned that your individual grade might suffer. . . . I also e-mailed you, but did not get a response. I don’t know if you didn’t have time, or if you have computer problems, but our project was submitted. Please talk to your instructor to see if maybe you can join another project group so that you can get this grade. . . .

Good luck. (December 9, A1, PBL 2, Group 9)

In this group, similar to most PBL groups, American participants were diligent, and they devoted themselves to finishing the project. Unfortunately, because the Taiwanese group member withdrew unexpectedly from the online collaboration, the relationship among members in this PBL group deteriorated rapidly; consequently, unsatisfactory online collaboration and tension among members were unavoidable.

Generally speaking, PBL group members who shared a strong cyber bond with one another tended to earn a higher PBL scores. On the contrary, some PBL groups failed to earn high PBL scores even when they had cultivated the cyber bond; however, they in generally enjoyed a higher level of satisfactory with online collaborative learning. Examining the numeric data, I discovered that American participants earned significant higher mean scores than their Taiwanese peers in terms of online learning self-efficacy (t=4.29, p<.05) and online learning expectation (t=2.20, P<.05); however, Taiwanese and American participants demonstrated no significant difference in terms of satisfaction with online collaborative learning.
However, participants’ narrative accounts included harsh responses from several participants:

I consider this to be one of the worst ideas that I have been forced to participate in during my tenure at Kent State. I also consider this to be the major downfall of downfall of this class and a major reason for me receiving low grades.

“Once we could get one of the Taiwanese participants to contribute, the experience was very good. his comments were unique and brought a different perspective to the project that us two Americans would not have had on our own.”

“PBL causes a lot of stress. . . . would have been more beneficial to do individually.”

**Proper Topics for Implementing Cross-Cultural Collaboration**

To my knowledge, researchers of online learning seldom discussed a crucial but controversial issue—what PBL issues or topics may be more appropriate in terms of facilitating cross-cultural online discussion and collaboration. Similar to cultivating cyber bonding, the topic selection may not be the sole factor ascribed to the successful performance of cross-cultural online collaborators; however, a topic-savvy online discussion group dramatically bolstered group members’ interests and persistent engagement in terms of online learning and discussion.

The data revealed that a fundamental concept underlying the PBL topic or issue for collaborative learning was an essential nuance: No dualistic “right or wrong” answer was associated with the problem; instead, “contextualized and situational” topics that resonate with participants’ varying language capabilities, prior knowledge, professional
backgrounds worked best. Finally, the topics should reinforce cross-culture understanding, awareness, and intelligence.

Some participant factors clarify and elaborate this concept further. In the current study, most participants, both Taiwanese and Americans, were educators, majoring in or teaching language arts and social studies. Consequently, topics related to natural science, which may be ideal in implementing PBL learning, were perhaps beyond the comprehension of some participants. Subjects, such as mechanical engineering, physics, biology, or chemistry fell into this category. In addition, some Taiwanese participants were unable to translate the terminology of certain subject areas into proper English. For example, Taiwanese participants were baffled even about how to pronounce a mathematic formula or equation in English, such as \( \sqrt{3} \) or \( \cdot \) or a formula like \( S=1/2at \); how to convert Celsius into Fahrenheit and feet and inches into centimeters. Zip codes and social security cards are also unknown to international participants. Those who had not equipped themselves with adequate prior cultural knowledge about the United States, English, and several specific subject areas found coping with the task extremely difficult.

Second, some culturally exclusive topics may have appealed to members coming from certain cultures, but these baffled and confused members without prior background knowledge of that culture. For example, in the current study, PBL groups chose to do projects on Black history, foreign language teaching (German), World War II, AIM communication, spark pioneers, or KWL charts in the curriculum design theory. These topics may have facilitated some participants’ critical and in-depth thinking but confused participants from different cultural and educational backgrounds because their knowledge
of some culturally exclusive issues was extremely limited. Consequently, it took large amounts of time to acquire additional knowledge and catch up with other group members. Time constraints presented a serious challenge to acquisition of that knowledge.

Third, I did not prevent any group from selecting culturally exclusive topics for the following reason. Viewed from a positive perspective, these culturally exclusive issues reflected the value of cross-cultural collaboration, in which participants from different cultures were invited to interact and collaborate with one another; as a result various perspectives derived from different cultural backgrounds were heard, shared, and reflected upon. In fact, participants confronting novice topics were able to practice cultural intelligence and problem-focused coping strategies to develop solutions collectively. Under ideal circumstances participants from cross-cultural backgrounds can offer innovative as well as in-depth perspectives on certain topics, and American peers can also reflect upon non-Western views by providing instant feedback and sincere encouragement, benefiting the entire learning process. Because of satisfactory online learning experiences in the current project, participants shared information and performed better, but most important of all, they established a very strong sense of community and cyber bond, verified above as important factors conducive to successful and rewarding online learning collaboration.

The following demonstrates a best-case scenario in support of my argument. The messages below were extracted from the discussion threads of PBL Cognition Group 3, in which American participants decided to pursue the American Civil War as the online discussion topic for their PBL projects. Nevertheless, one of the Taiwanese participants
expressed his apprehension to his American peers: As a foreign student, he lacked sufficient prior knowledge on this topic; however, he was no doubt one of the most active and articulate Taiwanese participants in this online collaborative learning and was very mindful of and interested in any culturally related issues as well. Like the other Taiwanese participants, he possessed no knowledge of American history, yet he confronted the challenge without shying away and contributed his unique perspective to the PBL group. His American peers responded to his inquiries and bafflements in no time with sincere welcome, patience, and encouragement. As a result, not only did this PBL group earn the second highest score, but they also became good partners and friends. They were the only PBL group members who continued to interact with one another even after the course officially ended. For instance, at Christmas, they exchanged holiday greetings on WebCT. Their online postings appear below.

Dear Steve, You had done a great job. As a foreigner, and know the Civil war very limited, I don’t know whether it is suit to connect it with some concepts as US Constitution, human right, . . . etc., or our goals is focus on promote student’s ability in reading, express one’s opinion. . . . (November 30, T15, PBL 2, Group 3)

Whether can we add “the meanings contrast of word cards” or something like that after each student find out history of their family in our plan? that is, as a foreigner, I don’t discriminate such words as negro, black man, or something with discrimination, because all the words are common for me— foreign language words.” (December 5, T15, PBL 2, Group 3)
Wu, Thanks for your input. Words like negro, black, and African American DEFINATELY have different meanings, or connotations, in our society. It may be good to discuss the different terms that were used to address the African American population, but it would possibly be a touchy subject, being that there are some derogatory terms that go along with the language that was used during the Civil War era (and some are obviously still used today). We just need to be careful not to offend anyone. We will see what Scott has to say on the issue and make a decision. (December 5, A11, PBL 2, Group 3)

The following messages also indicated American group members’ encouragement of Wu.

Actually, I think Nolan is right on target. . . . This brings a broader perspective, and will allow more students to begin the lesson(s) from the same, or close to the same, starting point. Thanks Nolan, great suggestions. I'll play with the lesson plan more around lunch time. (December 5, A22, PBL 2, Group 3)

Narrative accounts collected from the questionnaire focusing on participants’ online collaborative learning experiences were also inspiring. One of the participants said, “I really like to get to know people, even if online, from other countries. They give a whole new insight to a project and learning ideas.”

Another participant asserted, “Once we could get one of the Taiwanese participants to contribute, the experience was very good. His comments were unique and brought a different perspective.”
In summary, I propose that in PBL cross-cultural collaborative learning, topic selection should adhere to the following principles: (a) Select topics or issues providing opportunities for the inclusion of cross-cultural perspectives, thus generating productive discussion among group members; (b) relate topics or issues to participants’ prior knowledge and political, professional, and cultural background; and (c) avoid topics or issues too culturally exclusive or politically controversial because these topics may create unnecessary tension among participants.

Several miscellaneous factors emerged during this study, but they may not have been decisive in the success or failure of PBL groups because of small sample size and lack of support by numeric data. These factors, which appear below, may serve as points of reference for future researchers of these issues.

To Attach or Not Attach Makes a Difference

A somewhat minor but problematic issue arose as participants engaged in online collaborative learning with regard to sharing information with other PBL group members in asynchronous form: whether to present information as an attachment or directly in the body of the message.

Based on data extracted from Taiwanese interviewees, the preference was for the latter. Generally, Taiwanese participants opened attachments to read contents, but they regarded reading messages written in English a long, “burdensome process,” phrased exactly by one Taiwanese participant in the focus group interview. Taiwanese participants showed no tendency to use the attachment function to enclose or open
documents. Taiwanese interviewee’s narrative accounts with regard to posting attachments follow.

In fact, I do not like read attachments in any kind . . . even which is written by Chinese. In this study, after two clicks opening the attachment, I know I will read a long and burdensome content written in English full of unfamiliar words which I may need to look up in the dictionary, well, . . . sometimes I really have no time to deal with this. (T17, focus-group interview)

I sometimes ignore the information written and delivered in the attachment on purpose. I have no idea why . . . I prefer reading contents within the body of the message rather than opening up the attachment. As reading attached documents, I find it inconvenient because I have to double-check information shown up in two separated windows back and forth. (A7, focus-group interview)

In the current study all PBL groups, including American participants, preferred writing their comments or opinions in the main body of the message when inviting other group members’ feedback and when discussing details of PBL assignments. They rarely presented their comments or feedback as attached documents.

The preference to avoid attachments led to no conclusive finding, but PBL group members were more likely to follow the commonly agreeable CMC pattern, no matter was implicit or apparent, of delivering and displaying messages and then responding to them in a similar way. I discovered that PBL group members who preferred displaying contents in the main body instead of attachments received similar patterns of responses from peers. For example, Behavioral PBL Group 7 rarely attached documents. Each
message posted by group members contained at least seven lines, and several messages even exceeded the size of an 8.5” by 11” page. Coincidently, this group earned the lowest PBL score among all PBL groups.

Determining any correlation between the use of attachments and the performance of online collaborative learning performance was impossible because of the small sample size and lack of numeric data. Scant use of attachments by PBL groups may imply insufficient technological capabilities, for instance, their incapability to handle Java malfunctions. If that were not the case, perhaps PBL group members should be encouraged to adopt more attachments instead of discussing contents back and forth in messages. The degree to which the use of attachments impacts online collaborative learning can be addressed in future studies.

**Unexpected Withdrawals**

One of the most frustrating experiences for participants in online collaborative learning is bafflement and confusion about the assignment following abandonment by withdrawn peers during the process of. The situation could become even worse as participants withdraw unexpectedly, offering no reasonable explanations or excuses. Unfortunately, this worst-case scenario occurred in the current study several times, and some American participants had to suffer the consequences, severely hampering the process of online collaborative learning.

In PBL groups with withdrawn members, even if participants diligently tried to compensate for the collaborative gap caused by missing members, their efforts were unsatisfactory. Furthermore, those PBL groups in which participants withdrew
unexpectedly during the process of online collaborative learning suffered from the most serious consequences—the clash among group members that could never be mended. Thus, during the collaborative learning process, if a participant sensed that she or he may be unable to fulfill the online collaborative learning tasks competently, the best strategy includes (a) straightforward honesty with all PBL group members, (b) concise reasons, and (c) withdrawal.

The abrupt withdrawal of Taiwanese participants was troubling because they volunteered to join this study in the first place and then quit suddenly during the process of online learning. What puzzled me most was that these Taiwanese participants offered no reasonable explanation or excuse to their peers. They did not defend their decisions; they merely disappeared. Because I could not observe and get the information from the WebCT online data, I turned to Taiwanese participants’ follow-up focus group interviews for answers.

Participants in the focus group interview referred to the culturally exclusive construct known as losing face (丟臉) many times. This term denotes “extremely embarrassment, losing the right to be a human because one has been deprived of a face”; furthermore, the term connotes letting down a group, usually close family members, relatives, or friends, because an individual is unable to fulfill tasks or carry out particular duties. Constantly referring back to my own Eastern cultural framework while simultaneously contemplating this complicated loss of face construct, I realized that some Taiwanese participants, especially those incapable of fulfilling online learning tasks, considered themselves as people with lost faces. They felt ashamed of themselves for
their poor performance, so they simply disappeared as if they never existed instead of making excuses to defend themselves.

Reasons (a) that Taiwanese participants regarded their failure in online collaborative learning as a devastating loss of face and (b) that they offered no excuses about withdrawal derived from the Eastern cultural framework, in which one is encouraged to attribute faults and failures to one’s own lack of effort but success and honors to the assistance and contributions of the larger group to which they belonged. They chose avoidance as their coping strategy because in confronting events involving the loss of face, it was culturally acceptable to quietly back away from the challenge. Thus, Taiwanese participants adopted the extreme low-profile withdraw without providing any explanations or excuses.

Exploring Taiwanese participants’ withdraw behavior as well as the underlying psychological construct known as loss of face indicated that while addressing various issues emerging from online cross-cultural collaborative learning, a more holistic, interactive, and broader perspective is necessary. Both observable and unobservable data provided valuable insights into the genuine situation of what actually took place in the online cross-cultural collaborative learning situation.

In Chapter 4, various findings based on GT methodology have been respectively illustrated and elaborated. Building a comprehensive theory equipped with interpretative powers is the next task; thus, in Chapter 5 I have consolidated each finding, proposed probable connections among them, built a theory of online cross-cultural collaborative learning, and offered reasonable interpretations of this theory.
CHAPTER V: DISCUSSION

The primary purpose of this research was neither to test hypotheses nor verify probable variables as in conventional empirical studies. Instead, aligned with the genuine spirit of grounded theory (GT) methodology, the researcher intended to establish well-structured theories based on constantly emerging patterns and themes discovered from the dataset.

This chapter (a) contains theories emerging from GT data analysis, (b) elaborates crucial factors that may impact online cross-cultural collaborative learning, (c) provides feasible implications for online learning instructors as well as participants, and (d) addresses further studies for prospective researchers in this field. Because of limited sample size and missing data links, the statistical findings presented in this study can at best be interpreted as data for reference, serving as support for verifying the researcher’s argument.

The findings and suggestions in this chapter are intended to convey a holistic picture of online cross-cultural collaborative learning for English-speaking online learning instructors and participants in the US. As they collaborate with non-Western participants online, especially nonnative speakers of English born into or influenced by Eastern culture, they will discover that the findings and suggestions presented here will facilitate effective and productive online cross-cultural collaborative learning.
**Major Factors Contributing to Effective Online Collaborative Learning**

Figure 3 below shows online cross-cultural collaborative learning as an interactive dynamic in which everyone, including online learning instructors and all participants, no matter what their cultural origins or native language, are involved.

Second, three major factors are in play: the participants’ (a) English proficiency, (b) coping strategies, and (c) cultural intelligence, all of which contribute to their online learning performance. As shown in the figure, the English proficiency level of nonnative English-speaking participants forms the foundation of their ability to engage in online cross-cultural collaborative learning. In this study, it was quantified by their TOEFL reading and writing scores. Nevertheless, two other factors—coping strategies and cultural intelligence—impact participants’ overall online cross-cultural collaborative learning performance as well. As the figure shows, coping strategies, especially problem-focused coping strategies, contribute to participants’ effective online learning performance. The activation of problem-focused coping strategies correlates to how well participants exercise various emotion-focused coping strategies to establish themselves in a nonthreatening, mutually supportive and participant-friendly environment; nevertheless, coping is still based on participants’ English proficiency. In other words, without a certain level of English proficiency as the foundation, neither problem-focused nor emotion-focused coping strategies are likely to emerge, let alone operate effectively.
Figure 3. The dynamics among language ability, coping strategies and cultural intelligence.
Furthermore, coping and English proficiency do not overlap; therefore, high English language proficiency does not necessarily transform into problem-focused coping strategies.

The last factor—cultural intelligence—also contributes to participants’ overall online learning performance. In this study, participants with high cultural intelligence were more likely to address and respond to their peers’ culturally exclusive online learning behaviors or CMC patterns accordingly. Similar to coping, cultural intelligence is established on the foundation of participants’ English proficiency; however, compared to one’s coping strategies, cultural intelligence plays a less significant role in enhancing online learning performance. In the current study, cultural intelligence is more related to participants’ cognitive features, how well they are equipped with certain knowledge of other cultures instead of actually putting cultural knowledge into practice. Nevertheless, the degree to which one is willing to transform this cultural knowledge into actions still relates to exercising problem-focused coping strategies.

In this study the quality of the online collaborative learning performance of participants’ was determined by their CMC interaction on online learning asynchronous discussion boards. In addition, their online learning performance was also assessed through various numeric data obtained from their PBL collaborative project scores and the following: (a) times logged into sessions, (b) overall time spent in online learning, (c) time spent in online message reading and writing, and (d) their online message writing-to-reading ratio. Simultaneously, the researcher found that the online learning performance features illustrated above are implicit indicators of participants’ mental
resilience, their perseverance, and willingness to participate in online learning. Thus, participants equipped with mental resilience also exercise the perseverance needed to continue to engage in online learning. As a result, those individuals log into more discussion sessions, spend more time in the online learning platform to interact with peers, and read and write more messages.

In Figure 3, the width of the arrows indicates the degree of influence of the particular factor in the online learning performance. The dotted line implies probable correlation; however, it is neither evident nor conclusive. The probable relationship as well as dynamics among factors connected by the dotted lines may be tested in the future to bolster the theory. The next section elaborates each factor respectively and then introduces the established theory in detail.

**The Context: Nuances of Collaboration**

Online cross-cultural collaborative learning occurs in a broad context in which online learning instructors and participants are equally responsible for its success or failure; consequently, everyone involved must be equipped with a clear understanding of a variety of aspects of online cross-cultural collaborative learning and grasp the nuances of collaboration before involving themselves in the online collaborative learning process. Lacking preparation and knowledge of online learning, collaborative learning, and multiculturalism, instructors and participants have little chance to produce effective and efficient online cross-cultural collaborative learning.

Online cross-cultural collaborative learning, a cognitive as well as sociocultural developmental process, involves participants constantly interacting and engaging with
one another via CMC in a collective and reflective manner to fulfill the task of deeper knowledge construction and collective knowledge verification. As a result, collaborative learning itself—taking place in the traditional education setting or online—may be more a fine art than a set of standard teaching procedures for instructors as participants to follow. As with any subtle craft, to execute it perfectly requires participants as well as an instructor’s comprehensive preparation, vigilant planning, mental resilience, abundant prior knowledge, and effective executive strategies. Although the theoretical roots of collaborative learning were firmly planted in solid epistemological ground, such as Gestalt psychology, Piaget’s cognitive development, and Vygotky’s constructivism; and it has constantly proven effective as well as promising with learners in many subject areas and various settings, its unpredictable challenges require instructors as well as participants to spare no effort to make collaborative learning as productive and rewarding as possible. This may be especially true when collaboration takes place in the online setting with adult participants coming from cross-cultural backgrounds speaking diverse languages.

As a result, online learning instructors and participants must be cognitively and psychologically well prepared in order to recognize and deal with the emerging online learning challenges they constantly encounter. They must recognize the major differences between cooperation and collaboration and remain constantly alert to the possibility of online collaboration resulting in nothing more than a careless product in which each separate, isolated compartment is arbitrarily arranged and assembled. Data from this research illustrate that when this happens, groups can barely execute PBL.
collaboratively and the attempt eventually ends in an unproductive and unsatisfactory online learning performance.

Although understanding the construct of collaboration is essential, it is merely a prerequisite for online collaborative learning. When participants who are nonnative speakers of English engage in online cross-cultural collaborative learning, they inevitably encounter challenges; thus they require a solid foundation in online cross-cultural collaboration and some degree of English proficiency.

**English Proficiency: Necessary but Insufficient**

Without participants’ constant presence, participation, and contribution, online collaboration cannot even occur, let alone survive and thrive. As a result, in order to prevent premature withdrawal from the online collaborative learning process by participants who are nonnative speakers of English, their level of proficiency in English or the target language adopted as the major communication tool should be a serious consideration.

As the data illustrate, in an online cross-cultural collaborative learning setting, a major challenge nonnative English-speaking Taiwanese participants constantly encounter is the language-related challenge. Without exception, every Taiwanese participant in the current study mentioned his or her apprehension about an insufficient command of English, which they knew could hamper the progress of the entire PBL group. Their self-doubt in turn led to their lack of online learning self-efficacy in dealing with emerging challenges, which unfortunately brought chain-reactive side-effects, jeopardizing their
online collaborative learning performance. Furthermore, all these challenges were intertwined.

Language issues prevented Taiwanese participants from fully understanding the online learning instructor’s requirements or their American peers’ requests on PBL assignments in English; they responded to them incorrectly and were criticized. Their difficulties comprehending and following instructions written in English were exacerbated by unpredictable technological challenges, such as Java malfunction, browser crashes, software incompatibility, and computer virus infections. Their lack of full understanding of the instructor’s requirements left them confused and disoriented, unable to position themselves in the assigned PBL collaborative learning group, eventually failing to fulfill tasks as expected. Even if some of them strived hard to fulfill the basic requirement—to use English to communicate with American peers—they still lacked the English ability required to complete their parts of the PBL assignments independently. For instance, they needed constant assistance from their American peers to do grammar checking and proofreading for them on their English writing, which unfortunately wasted considerable time in an already extremely tight online collaborative learning schedule. Consequently, sometimes Taiwanese participants’ responses or presence was lacking. Compared to their American peers’ online learning performance, overall they were passive, reticent, and nonassertive. They never served as online learning PBL project leaders, and at best, they strived to respond accordingly to PBL requirements.
Language issues also impacted the use of CMC by Taiwanese participants. For instance, in general they preferred asynchronous communication because synchronous communication requires fluency in oral English, which made Taiwanese participants extremely anxious. Although using asynchronous communication with American peers as a stress buffer earned them extra time to reflect, contemplate, and organize their thoughts as well as express them in a grammatically and semantically comprehensive way, viewing the situation from a psycholinguistic perspective, writing, especially in one’s L2, is hardly a worry-free process. Because of their unfamiliarity with English, Taiwanese participants’ English-typing speed was relatively slow and ineffective. In addition, considerable literature suggests that when writing in L2 instead of L1, writers’ cognitive strength and psychological wellness may be compromised. For instance, the cognitive scaffolding process provided by advanced learners may not be fully functional because advanced learners may lose the advantage of manifesting their cognitive power as a result of their limited capability in L2. In fact, numeric data, although it came from a very limited dataset, also implied that Taiwanese participants’ English proficiency, as shown by their TOEFL writing scores, correlates to their various online learning performance as well.

For participants who are nonnative speakers of English, language-related challenges are not static; they gradually evolve and change, as demonstrated by noticeable differences in language-related issues discovered between the first PBL assignment and the second one. In the first PBL project, Taiwanese participants’ major concerns related to self-doubts about their English proficiency and their apprehension
about their limited language ability, which deterred them from fulfilling the required
tasks of online collaborative learning. The consequence was that some Taiwanese
participants remained reticent and inactive; others even withdrew prematurely during the
online collaborative experience. During the follow-up focus group interview, the
researcher found that those Taiwanese participants who prematurely withdrew from the
online collaborative learning process as soon as challenges arose did not even give it a
try. They merely assumed that they could not make it because of their limited English
proficiency and gave up.

Although participants’ English proficiency is important, more information is
needed to decide conclusively how participants who are nonnative speakers of English
perform in the online collaborative learning setting. Factors other than language
proficiency came into play. The second critical factor facilitating participants’
perseverance throughout the online cross-cultural collaborative learning process was their
problem-focused coping strategies.

Mental Resilience and Effective Coping Strategies

Certain factors transform Taiwanese participants’ nonproductive language-related
self-doubts and apprehensions into the tools needed for a more productive collaborative
learning process. In other words, when encountering challenges, some people persevere
and thrive when others just quit trying and withdraw. Rutter (2008) and Masten (2009)
enumerated these factors: mental resilience accompanied by appropriate coping
strategies, the constant process of regrouping, and regulating as well as transforming
inner strengths into the action-oriented problem-solving process.
Rutter (2008) and Masten (2009) claimed that mental resilience and executing action-oriented coping strategies contribute to perseverance; they factors correspond with Taiwanese participants’ online learning behaviors in this current study. The numeric data suggest two emerging themes. At first, surprisingly, the data imply that although the correlation exists, the most significant correlation does not exist between Taiwanese participants’ TOEFL scores and features representing their online learning performance. Taiwanese participants who come into the online cross-cultural collaborative learning setting with a high level of English proficiency do not necessarily manifest their language advantages and transform this strength into engagement with online collaborative learning.

Second, both the number of times Taiwanese participants logged into sessions and how much time they were willing to remain online to interact with peers positively correlate to the time they spent reading and writing messages. This phenomenon can be interpreted as Taiwanese participants’ willingness to persevere: Staying connected with their PBL groups and remaining active play a very important role, which is reflected in the time they spent reading and writing messages.

Finally, showing mental resilience is surely conducive to Taiwanese participants’ effective online learning; however, that quality cannot be manifested and functional to the fullest until participants exercise certain strategies to facilitate them. The data indicate that in order to persevere throughout the online collaborative learning experience, in addition to mental resilience, Taiwanese participants exercise problem-focused and task-oriented coping strategies. For instance, they strive to concentrate on what they need to
do, avoiding distraction by trivial or competitive behaviors or thoughts. They direct
attention to the problems themselves and put effort into solving them step by step. They
also intentionally restrain themselves from acting too quickly but manage to analyze the
pros and cons of the situation first. Categorized as problem-focused strategies on the
Coping scale by most mainstream psychologists, these strategies can be useful in helping
participants engage more thoroughly in the online learning process. Mental resilience
and problem-focused coping strategies are reflected in an increase in Taiwanese
participants’ writing and reading messages. With the progress of online learning, they
invest more attention and concern into meeting challenges with their American peers
instead of remaining inactive and reticent, worrying.

As shown in the content analysis, Taiwanese participants gradually acknowledged
that steeping themselves in emotion-laden language apprehension is neither helpful nor
productive; similarly, they realized that merely sharing emotions with peers and worrying
about whether they could survive without doing something productive are also fruitless.
As a result, in the second PBL project, their language-related apprehension gradually
transformed; they became more practical and goal-oriented. Of course, their English
capability was still relatively limited, but they gradually learned to leave unproductive
language-related apprehension behind and to emphasize how to take advantage of the
current situation to the fullest, to find resources, and to figure out a proper manner to
interact effectively with their American peers. As the data indicate, in the second PBL
assignment they were more concerned about practical and procedure issues, such as PBL
collaboration strategies, assignment clarification, resources, and feasible solutions to a
variety of technological problems. These findings also indicate that Taiwanese participants’ problem-focused strategies played a certain role in drawing them away from language-related apprehension and self-doubt.

**What Activates Mental Resilience and Problem- and Emotion-Focused Coping Strategies**

Exercising problem-focused coping strategies can enhance the online learning performance of Taiwanese participants and release them from the trap of language-related apprehension; however, a second crucial issue in terms of their coping strategies also deserves attention. Once Taiwanese participants exercise a series of emotion-focused coping strategies (so-called by most mainstream psychologists) as a prerequisite, they are then able to activate their problem-focused strategies.

The following are examples of emotion-focused coping behaviors used by Taiwanese participants. As shown in the content analysis, they adopted strategies including exercising Internet etiquette, sharing emotions, engaging in self-revelation, and emphasizing the sense of online learning community to create a nonthreatening environment. As they grew to perceive the friendly interaction, mutual support, and warm encouragement in the online learning environment, they effectively focused on their mental energies and cognitive concentration to activate problem-solving process.

Nevertheless, why Taiwanese participants are prone to adopt these somewhat culturally exclusive, so-called emotion-focused coping strategies remains a question. The researcher has argued that it may not be appropriate to sort coping strategies into mutually exclusive and independent categories. Coping strategies should be interpreted
in terms of the cultural context, and this is especially true when online instructors or
participants address coping strategies in the online cross-cultural collaboration setting. In
some cultures, for example, Eastern culture under the influence of Buddhist psychology
or Confucian thought, the most effective coping strategies are neither “problem-focused”
nor “emotion-focused.” Instead, coping implies a process of transformation from
fostering mental preparation to analyzing all the pros and cons of the situation to seizing
the right time and occasion, that is, taking action. When all factors are addressed
appropriately, they can cope with and solve problems. In the current study, Taiwanese
participants’ online collaborative learning behaviors also reflect these very culturally
exclusive traits.

As a result, if cultural as well as language factors are not seriously considered, the
coping strategies Taiwanese participants adopt to initiate online learning may be
inappropriately interpreted as maladaptive emotion-focused or avoidance coping
strategies. The strong connection between their emotion-focused coping strategies and
problem-focused strategies, however, implies that outwardly they feel an inclination,
based on cultural beliefs, to build close connections with people with whom they would
like to collaborate in the context in which they are placed so that they can perceive online
learning environment as nonthreatening and supportive. Once this nonthreatening
environment can be established, they adopt problem-focused strategies that have been
influenced by their inherited cultural beliefs, such as fostering psychological strength and
practicing focus, patience, undivided attention, concentration, and action at appropriate
times, to deal with challenges they encounter. Once the transition is executed well,
Taiwanese participants, even those with limited English proficiency, can still be very successful and effective online collaborative learners.

The extremely limited sample size and the correlation coefficients are bound to be influenced and mediated by uncontrollable variance, so the researcher cannot make conclusive statements; however, in terms of coping, emerging findings still suggest one major theme. Taiwanese participants may be constantly challenged by self-doubt and apprehension about language-related issues, and their English proficiency may be relatively moderate; but if they possess mental resilience, transforming this psychological strength into action, that is, problem-focused coping strategies, then they can still be active in collaborative learning, enjoying productive experiences throughout the process.

However, to Taiwanese participants, this psychologically demanding transformation of coping strategies cannot naturally and automatically take place if they cannot establish a nonthreatening and supportive online learning environment first. As a result, Taiwanese participants use plenty of emotion-coping strategies to reach this goal. They try strategies such as making emotion-sharing, self-revelation, and building the sense of community to solidify their psychological strength, such as concentration and attention.

**Cultural Intelligence**

Besides coping, another important factor impacting online cross-cultural collaborative learning is cultural knowledge, or the construct of cultural intelligence. To elaborate the construct of cultural intelligence further, the coping factor is essential. In fact, from the perspective of cross-cultural psychology, coping is virtually a mechanism
of acculturation, a series of strategies people strive to exercise to adapt themselves to the unfamiliar situation, the know how per se; however, this process of acculturation cannot be effective and smooth unless it is accompanied by cultural intelligence, or the know what.

People who have high cultural intelligence are prone to equip themselves with cognitive, metacognitive, motivational, and behavioral knowledge to acculturate themselves into the unfamiliar online cross-cultural collaborative setting. They can be more culturally effective and appropriate while interacting with people from other cultures, which in turn, leads them to be more devoted in the online collaborative learning setting. As a result, working together, problem-focused coping strategies, and cultural intelligence propel online cross-cultural collaborative learning participants to persevere throughout the online learning process, contributing to their performance.

CMC provides an example of the way cultural intelligence affects participants’ online cross-cultural collaborative learning. American participants gradually recognized Taiwanese participants’ nonlinear communication patterns and responded to them accordingly; meanwhile, Taiwanese participants realized how their American peers tackled problems in a more confident and independent manner. PBL groups in which these phenomena occurred earned higher PBL scores and felt more satisfaction with their online collaborative learning.

Cultural intelligence also makes those topic-savvy PBL groups perform more effectively in online learning. For instance, if members raise culture-related issues and bring them into the PBL discussion and the rest of group members constantly provide
positive as well as informative feedback showing genuine interest in interacting with and engaging in culturally related issues, then those PBL groups generally earn higher PBL scores. This finding is especially applicable to Taiwanese participants. When they strive to raise culture-related issues or respond to their American peers on cultural topics they are interested in, positive feedback from American peers may facilitate continued engagement in interaction and communication. On the contrary, if they receive no feedback or their opinions are neglected, the confidence needed to persevere is reduced or eliminated. One interviewee stated that without feedback on his posted messages, he seriously doubted whether his English was refined enough to interpret complex cultural issues, therefore confusing peers. Without feedback, apprehension grows, hampering willingness to continue engaging in online learning.

As a result, persevering participants are engaged and devoted during the process of online collaborative learning, not only coping with challenges in a problem-focused manner but also supported by their cultural intelligence, adjusting themselves constantly to the requirements of the novice online learning situation. Like problem-focused coping strategies, numeric data also suggest that CQ positively correlates to all Taiwanese participants’ online learning performance factors. Among them, time spent correlates with participants’ CQ scores at the highest level.
Theory and Implications:

Dynamics Among Language, Coping, and Cultural Intelligence

The three emerging factors—language, coping strategies, and cultural intelligence—and the interactive dynamics among them allow the GT methodologist to develop a theory of effective practice of online cross-cultural collaborative learning.

This theory provides insight and advice for English-speaking online learning instructors and American participants collaborating with non-Westerners, especially those who are nonnative speakers of English from Eastern cultures. In addition, the limited sample size, missing data, and qualitative-oriented research adopted in this study preclude conclusive statements; however, a sketch of various phenomena taking place in online cross-cultural collaborative learning illustrates the underlying dynamics operating among them and provides feasible implications for prospective online learning instructors and participants.

Starting from the Large Context

Collaboration, hailed by numerous researchers as one of the most promising instructional strategies to promote learners’ higher-order and critical thinking, is nevertheless unpredictable and complicated. As shown in Figure 3, for instructors and participants involved in online cross-cultural collaborative learning, knowledge of collaboration is essential. They require an understanding of what collaboration means as well as methods to solve emerging conflicts and reduce confusion among group members during the process of collaboration. In addition, they must be mentally and cognitively
prepared to encounter challenges and have at least a basic understanding of what these challenges may be and in what manner they may arise.

Before the initiation of an online collaborative learning course, instructors and participants, if conditions permit, should hold a brief orientation online or in the traditional education setting. First, participants should be equipped with an overall understanding of the online collaborative course: how it will proceed, what the main instructional strategy will be, and how participants will be assessed. Second, participants should learn about members’ educational, cultural, and language background, especially if some are nonnative speakers of English. They should gain an understanding of what kind of cultural backgrounds they have. If time permits, participants who are nonnative speakers of English may introduce themselves briefly and straightforwardly express their concerns about online collaborative learning and determine how they can be assisted, if necessary. Finally, participants should be educated about the genuine spirit of online cross-cultural collaborative. If the instructional strategy of PBL learning is introduced in the course, the major construct of PBL should be addressed also: what the PBL is supposed to be and what advantages and disadvantages it carries.

**Addressing Language-Related Issues**

During online cross-cultural collaborative learning, nonnative speakers of English are constantly challenged by language-related issues, which take a tremendous toll on them both cognitively and psychologically. Even if they have strong language ability, they may still feel apprehensive about whether or not they can fulfill the demands of
online collaborative learning. As a result, language issues should always be addressed and handled at the outset.

The instructor and participants should be always mindful of how their nonnative English speaking peers’ limited English proficiency impacts, positively or negatively, the various aspects of their online collaborative learning, for example, CMC interaction patterns and online collaborative learning performances. During the process of online collaborative learning, instructors should provide adequate and nonthreatening means of CMC, especially asynchronous communication; grant them extra time to finish tasks; and provide timely assistance on language issues. For instance, instructors could assist nonnative English-speaking participants by clarifying what they write or say in English; when assessing collaborative project submitted by nonnative English-speaking participants, instructors should focus on the content instead of basing grades on the grammatical or rhetoric aspects of English. Nonnative English-speaking participants must strive to equip themselves with a certain level of English proficiency in preparation to collaborate online with American peers. They should not expect favorable treatment from instructors or peers because of limited language proficiency. On the contrary, they should be aware that successful and productive online collaborative learning requires all participants’ interaction and contribution by language exchange, and they must meet this need by constantly improving their language proficiency.

Enhancing Problem-Focused Coping Strategies: The Facilitator

One of the key claims in this study is that contrary to popular belief, although nonnative English-speaking participants’ English language proficiency positively affects
their online learning performance, language proficiency is only an important factor, not the decisive one. Both quantitative and qualitative data suggest that online participants’ willingness to participate as well as their mental resilience throughout the online learning process outweighs their TOEFL reading and writing scores. In other words, English language proficiency may not guarantee participants’ effective online learning performance: Many other factors, such as willingness to participate in online learning, mental resilience, constant exercise of problem-focused coping strategies, and cultural intelligence, exert tremendous impact. As a result, enhancing participants’ mental resilience accompanied by the exercise of problem-focused coping strategies becomes very important.

Encountering challenges, people adopt a variety of coping strategies to remove themselves from the stressful situation. The literature as well as the findings in this study suggest that when confronting online collaborative learning challenges, no matter how demanding and complicated they are, if participants cope with them with mental resilience accompanied by the exercise of task-oriented and problem-focused strategies, online participants’ actually exercise the best strategies in terms of taking part in online collaborative learning.

Despite constant challenges resulting from apprehension over language-related issues, Taiwanese participants showed mental resilience, such as staying alive and active during the process of online collaboration, learning by logging into more sessions, spending more time in reading and writing messages; they gradually transformed, leaving behind their nonproductive apprehension and engaging in more problem-focused actions.
Both qualitative and quantitative data suggest that in the second PBL assignment, they were more concerned with issues related to collaborative and procedural skills.

This positive transition does not emerge automatically and naturally. In this study, the transition was based on Taiwanese participants showing mental resilience and activating promising problem-focused coping strategies: They needed at least to perceive if not manage to create a nonthreatening, supportive, and friendly online collaborative learning environment. In order to do so, Taiwanese participants in general adopted a variety of so-called emotion-focused coping strategies first to initiate the online collaborative learning. These included emotion-sharing, self-revelation, refraining from acting too quickly, maintaining reticence until the moment was right, and mindfulness of criticism or positive feedback from their American peers. Taiwanese participants do not adopt these strategies seeking emotional support for its own sake. On the contrary, they use these strategies to create gradually a sense of community, an environment of mutual trust and support among group members—and they feel the sense of security and support they need to proceed with online collaborative learning with their peers. The more positive feedback they receive from their peers as they adopt these strategies, the more likely they are to show mental resilience accompanied by problem-focused coping strategies to persevere throughout the online learning process.

Based on the findings about coping strategies, some implications for online instructors and participants emerged. First, sometimes passive and nonlinear online collaborative learning behaviors do not necessarily indicate participants’ lack of motivation or willingness to engage in online collaborative learning. Instead, it may
indicate that non-Western and nonnative English-speaking participants need extra time to ponder how they should deal with the challenges and situations they encounter.

Second, not only cognitive supports but as much psychological encouragement as possible must also be provided for participants. The latter may be even more necessary than the former to motivate participants to persevere throughout the online learning process. As a result, online learning instructors as well as participants should strive to create a nonthreatening, even buoyant environment with a positive and supportive atmosphere in which participants feel respected, welcomed, and joyful. For instance, online collaborative learning participants could introduce themselves and share their family backgrounds and interests with peers. An online coffee shop could be a place where all participants are encouraged to exchange casual conversation and express their feelings without being constantly monitored by the instructor.

Third, the transition from participants’ emotion-focused to problem-focused coping may not occur automatically. Thus, timely assistance or encouragement is necessary when participants show signs of withdrawal, disengagement, or entrapment in seemingly endless emotional chatter.

Finally, if possible, participants should be educated about appropriate coping strategies when they encounter challenges. They should be informed that no strategy may be “the best” coping strategy; however, most research indicates that mental resilience accompanied by problem-focused strategies is the best means to solving problems.
Assistance of Cultural Intelligence

In a broader sense, the very process of online learning participants’ gradually adjusting themselves into novice online collaborative learning could actually be regarded as the process of acculturation. If coping is the know how of the acculturation, then cultural intelligence is the know what. Participants equipped with higher cultural intelligence not only have adequate knowledge of other cultures but also the motivation and skills to respond to various situations accordingly; therefore, with cultural intelligence, especially in the online cross-cultural setting, one could surely cope with challenges more effectively and adjust to the online collaborative learning environment efficiently. The moderate connection between COPE and CQ may also suggest a similar conclusion. Besides, the data suggest that Taiwanese participants’ TOEFL scores, especially in reading, correlate to their level of cultural intelligence, implying that cultural intelligence is like a cognitive entity.

In this study, the data suggest that if participants from cross-cultural groups recognize and are mindful of one another’s specific cultural backgrounds, beliefs, CMC patterns, preferences for coping strategies, and most important of all, respond to various situations in a culturally appropriate and supportive manner, then conflicts and misunderstandings among cross-cultural group members will decrease, in turn, increasing the level of appreciation for online collaborative learning among Taiwanese and American participants.

American participants may acknowledge, even appreciate, the insights of non-Western and nonmainstream perspectives brought into the online collaborative learning
process. Non-Western or nonnative English-speaking participants gain opportunities to improve their English skills by constantly interacting with American peers. Besides, they can also learn how their American peers react to certain issues and in what manner without being manipulated by biases or the mass media. This surely is a win–win situation all online learning instructors and participants would like to envision.

The role of cultural intelligence also carries implications. First, cultural intelligence can be fostered and enhanced. To reach this goal, cultivating one’s sensitivity and mindfulness of culture-related issues is the key. If online instructors and participants remain constantly mindful of the influences attached to cultural factors during the process of online cross-cultural collaborative learning, misunderstandings and conflicts among group members decrease.

For instance, engaging in an “ice-breaking activity” before the initiation of online collaborative learning is beneficial. Participants taking part in this activity could introduce themselves and share their cultural heritage with one another by presenting videos, music, or images. The data in this study suggest that in PBL, topic selection is important as well. Online instructors and participants may not want to raise topics with narrow cultural significance to one or the other cultural groups participating; doing so causes confusion. With carefully chosen topics, participants can increase their knowledge of the other cultures’ political or educational systems, and use them as topics for inducing other participants’ participation and initiating online PBL discussion.

Non-Western online learning participants need to “fit in” as well. Instead of constantly asking for favorable treatment from American participants, they also need to
acknowledge what behaviors and knowledge are considered appropriate in the host online learning context and strive to acquire and implement these skills.

**Limitations and Recommendations for Conducting Further Research**

Because of the qualitative research-oriented GT methodology adopted in this study, extremely limited sample size, and some missing data, the current study cannot be regarded as empirical research. Although findings obtained from the current study may depict the phenomenon of online cross-cultural collaborative learning and provide insight for prospective online learning instructors and participants, the researcher cannot irrefutably argue that these findings share the same level of reliability and validity as most rigorous empirical studies.

Nevertheless, the researcher has clearly and repeatedly emphasized that the current study could be considered a pilot study, aimed at discovering emerging factors contributing to effective online cross-cultural collaborative learning and providing the reader with insights into the complexities of online cross-cultural collaboration. Based on this intention, the researcher discovered that participants’ English proficiency, the capability to exercise problem-focused coping strategies, and cultural intelligence may be the most influential factors in successful cross-cultural online learning. The researcher has also established a comprehensive theory of the mechanisms implicitly operating among participants’ English proficiency, coping strategies, and cultural intelligence; but theories established and factors discovered from GT methodology should be tested and verified further. In fact, the researcher recommends conducting further studies based on theories established in the current study.
First of all, participants’ premature withdrawal and the limited sample size were a major drawback in the current study. If this study were repeated in the future, its reliability and validity could be enhanced by recruiting more participants from the US and Taiwan; noticeable variation in the findings would be important.

Second, besides participants’ language proficiency, coping strategies, and cultural intelligence, one of the covariates that impacts online learning performance is participants’ motivation to take part in this current study. Apparently, American and Taiwanese participants’ preliminary impetus to take part in this current study differed. American participants did not have other choices but to finish this course and earn credits; Taiwanese participants, who were merely volunteer participants, could come and go without suffering any consequences. Whether this difference in motivation impacted the results of the current study merits further investigation.

Third, participants’ unique personality traits may have played a certain role in this study, too. The differences between Taiwanese and U.S. participants’ CMC or online learning behaviors can be ascribed to the three factors illustrated above or merely to personality traits. Administering the BIG-5, one of the most popular personality inventories, would reveal the significance of any interactive dynamic among participants’ personality, English proficiency level, coping strategies, and cultural intelligence.

Fourth, in terms of participants’ language proficiency, future researchers may wish to examine whether participants’ CMC really changes if they are placed in an environment where they can freely express themselves in L1; for instance, whether or not Taiwanese participants’ CMC patterns or preferences dramatically change if they interact
only with Taiwanese peers is of interest. Will they still frequently use emoticons? If they do, what types of emoticons would they prefer to adopt? Will they still adopt nonstraightforward communication patterns featuring courteous narrative accounts? Last but not least, because language apprehension has been removed as a factor, will Taiwanese participants adopt CMC patterns similar to Americans?

Fifth, because issues related to coping strategies are seldom addressed in online learning literature, plenty of prospective and promising studies could be done on this topic. First, in the current study the researcher has argued that participants’ adopting problem-focused coping strategies plays an important role in enhancing their online learning performance. However, could one’s coping strategies be learned and nurtured? If the answer is affirmative, will positive changes occur if participants in experimental groups—before their taking part in online collaborative learning—are taught what problem-focused coping strategies are and how they can be exercised? Furthermore, do participants’ problem-focused coping strategies still play such an important role if they are collaborating with one another in the traditional classroom setting instead of online setting or with culturally homogeneous peers instead of cross-cultural groups? Finally, are one’s coping strategies ingrained within one’s personality or do situational characteristics vary across occasions? If people showing problem-focused coping tendencies are assigned together in an experimental group, would they perform more effectively and productively than other group members who are merely grouped at random?
The transition mechanisms people use when moving between emotion-focused and problem-focused coping strategies are also worthy of further inquiry. In this study, the researcher discovered that at least for Taiwanese participants, exercising emotion-focused coping strategies, such as seeking support and encouragement, is necessary for them to build a nonthreatening online learning environment, which in turn facilitates their adopting problem-focused coping strategies. Is the phenomenon found in the current study applicable to similar situations? Do one’s exercising emotion-focused coping strategies universally lead to the implementation of problem-focused coping strategies, or did this phenomenon merely take place in the current study? In terms of coping strategies, do participants coming from diverse cultural backgrounds prefer certain coping strategies over others? If so, then when and how do they activate their coping strategies?

Cultural factors play certain roles in online cross-cultural collaborative learning. Because cultural intelligence can be fostered, further inquiry could determine whether participants in an experimental group who are taught culture-related issues before taking part in online learning, including specific cultural knowledge and behaviors, would perform more effectively and productively than peers randomly assigned in controlled groups. Second, in this study the researcher discovered that the topic choices of PBL groups impact their interaction and collaboration. For instance, topics associated with conflicts and controversies may provoke intense discussion among group members; on the contrary, topics that are universally acceptable and “safe” may not offend anyone but reduce opportunities for the expression of provocative opinions. What guidance would
facilitate topic choice in cross-cultural PBL groups as they collaborate? What types of culture-related topics may lead to what kinds of difference in online CMC patterns? The foregoing questions are all worthy of study.

Finally, future research could be conducted to determine whether any difference in online learning performance exists between participants who received orientation on collaboration and those who did not. Another point of interest in future research on this subject is possible differences in the quality of the PBL project between participants who follow the requirements of collaborative learning and those who do not.

**Effective Practice of Online Cross-Cultural Collaborative Learning**

Online cross-cultural collaborative learning is a research subject seldom investigated. Addressing this issue from unconventional perspectives, such as participants’ coping strategies, non-Western participants’ English language proficiency level, and cultural factors, was the researcher’s intent in the current study in order to contribute the knowledge obtained to the field of online cross-cultural collaborative learning. The researcher also intended to help online learning instructors as well as participants, especially when they enjoy the precious opportunity to collaborate with people from other cultures speaking diverse languages, by providing practical insights from findings and know how to make their online collaborative learning more effective.

Effective practice for online cross-cultural collaborative learning includes first, mindfulness that online cross-cultural collaborative learning may be a process fraught with challenges. For instance, various language-related issues may be perceived as the most challenging to non-Western participants with limited English proficiency. To make
online cross-cultural collaborative learning proceed smoothly, issues with regard to online learning challenges should be appropriately attended and addressed.

Second, challenges could best be solved and conquered if online learning instructors as well as participants are willing to show the mental resilience needed to persevere throughout the online collaborative learning process by constantly engaging in online collaborative learning instead of shying away or withdrawing.

Third, to persevere requires that several conditions are met. Online learning participants should be aware that showing mental resilience accompanied by exercising appropriate problem-focused coping strategies provides the best opportunity for them to survive and thrive in online collaborative learning.

Fourth, especially non-English speaking participants from non-American cultures may need to establish for themselves a nonthreatening online learning environment to feel secure and psychologically ready; then they are able to exercise appropriate problem-focused coping strategies to handle challenges. Initially, they may adopt strategies conventionally considered emotion-focused coping strategies, such as emotion-sharing, revealing personal information, and building cyber-bonds. They do not exercise emotion-focused coping strategies for their own sake; on the contrary, adopting these very strategies serves a situational purpose, facilitating transition to the ability to face challenges effectively and efficiently.

Fifth, if instructors and participants equip themselves with certain levels of cultural intelligence, online cross-cultural collaborative learning will definitely proceed smoothly and productively. People with cultural intelligence not only possess knowledge
of other cultures but also of the CMC patterns and particular behaviors of other cultures; they know how to react and respond to situations and people in a culturally appropriate manner.

Online cross-cultural collaborative learning is promising because it manifests the genuine spirit of people’s collective knowledge construction and collaboration, which is a precious heritage human beings share. The secret of happiness was revealed by Buddha 2,000 years ago. People should treat each and every person with genuine compassion and mutual understanding because all human beings are inherently interconnected. This is especially true now as people coming from different cultural and linguistic backgrounds enjoy the unprecedented opportunity to collaborate with one another online.
APPENDIX A

SAMPLE BEHAVIORISM SCENARIO: PBL1
Appendix A

Sample Behaviorism Scenario: PBL 1

Your school district has decided to implement a major change in curriculum and teaching strategies. This change will be based on behaviorist principles (perhaps leading to the conclusion that the district’s leadership isn’t exactly up-to-date, but we will not worry about that right now). For example, there will be a bigger emphasis on good behavioral objectives for all classes from now on as well as using them directly in teaching and assessment. Teachers and, indeed, all school staff, will be expected to use behavioral techniques to ensure good behavior. The instruction itself will reflect behaviorist principles in various ways, such as using mastery learning systems, programmed instruction, and CAI if possible, and other techniques. As part of the transition, the administration has realized that a great deal of faculty development and teacher training will be required. Fortunately, they have set aside enough time and money (no, really) both before the school year and for in-service programs during the year. You have been appointed as the committee to design and develop the instruction and supporting materials for the faculty development programs.

Your first task will be to plan the overall program and develop an introduction to it. That is the problem here: To begin to design the faculty development programs to make this shift to behaviorist teaching strategies work. What do you need to do?
APPENDIX B

COPE SCALE
Appendix B

COPE Scale

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what you generally do and feel when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.

Then respond to each of the following items by blackening one number on your answer sheet for each, using the response choices listed just below. Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true FOR YOU as you can. Please answer every item. There are no "right" or "wrong" answers, so choose the most accurate answer for YOU—not what you think "most people" would say or do. Indicate what YOU usually do when YOU experience a stressful event.

1 = I usually don't do this at all
2 = I usually do this a little bit
3 = I usually do this a medium amount
4 = I usually do this a lot

T 1. I try to grow as a person as a result of the experience.
A 2. I turn to work or other substitute activities to take my mind off things.
T 3. I get upset and let my emotions out.
*T 4. I try to get advice from someone about what to do.
A 5. I concentrate my efforts on doing something about it.
A 6. I say to myself "this isn't real."
T 7. I put my trust in God.
T 8. I laugh about the situation.
T 9. I admit to myself that I can't deal with it, and quit trying.
*T 10. I restrain myself from doing anything too quickly.
*T 11. I discuss my feelings with someone.
A 12. I use alcohol or drugs to make myself feel better.
T 13. I get used to the idea that it happened.
T 14. I talk to someone to find out more about the situation.
T 15. I keep myself from getting distracted by other thoughts or activities.
A 16. I daydream about things other than this.
T 17. I get upset, and am really aware of it.
T 18. I seek God's help.
A 19. I make a plan of action.
T 20. I make jokes about it.
A 21. I accept that this has happened and that it can't be changed.
A 22. I hold off doing anything about it until the situation permits.
*T 23. I try to get emotional support from friends or relatives.
A 24. I just give up trying to reach my goal.
T 25. I take additional action to try to get rid of the problem.
A 26. I try to lose myself for a while by drinking alcohol or taking drugs.
A 27. I refuse to believe that it has happened.
T 28. I let my feelings out.
*T 29. I try to see it in a different light, to make it seem more positive.
*T 30. I talk to someone who could do something concrete about the problem.

A 31. I sleep more than usual.
T 32. I try to come up with a strategy about what to do.
T 33. I focus on dealing with this problem, and if necessary let other things slide a little.
*T 34. I get sympathy and understanding from someone.
A 35. I drink alcohol or take drugs, in order to think about it less.
T 36. I kid around about it.
A T 37. I give up the attempt to get what I want.
*T 38. I look for something good in what is happening.
A 39. I think about how I might best handle the problem.
T 40. I pretend that it hasn't really happened.

T 41. I make sure not to make matters worse by acting too soon.
T 42. I try hard to prevent other things from interfering with my efforts at dealing with this.
A T 43. I go to movies or watch TV, to think about it less.
T 44. I accept the reality of the fact that it happened.
T 45. I ask people who have had similar experiences what they did.
T 46. I feel a lot of emotional distress and I find myself expressing those feelings a lot.
T 47. I take direct action to get around the problem.
T 48. I try to find comfort in my religion.
*T 49. I force myself to wait for the right time to do something.
*T 50. I make fun of the situation.

A 51. I reduce the amount of effort I'm putting into solving the problem.
*T 52. I talk to someone about how I feel.
A 53. I use alcohol or drugs to help me get through it.
T 54. I learn to live with it.
A 55. I put aside other activities in order to concentrate on this.
A 56. I think hard about what steps to take.
A 57. I act as though it hasn't even happened.
A 58. I do what has to be done, one step at a time.
T 59. I learn something from the experience.
T 60. I pray more than usual.

* Reaching statistically significant difference.
A: American participants’ scores are higher than Taiwanese’.
T: Taiwanese participants’ scores are higher than Americans’.
APPENDIX C

CULTURAL INTELLIGENCE SCALE (CQ)
Appendix C

Cultural Intelligence Scale (CQ)

Read each statement and select the response that best describes your abilities. Select the answer that BEST describes you AS YOU REALLY ARE. (1 = strongly disagree. 4 = strongly agree)

A. MC 1. I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
A. COG 2. I know the legal and economic systems of other cultures.
T. MOT 3. I enjoy interacting with people from different cultures.
T. BEH 4. I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.
A. MC 5. I am conscious of the cultural knowledge I apply to cross-cultural interactions
T. COG 6. I know the religious beliefs of other cultures.
A. MOT 7. I enjoy living in cultures that are unfamiliar to me.
* T. BEH 8. I change my non-verbal behavior when a cross-cultural situation requires it.
T. MC 9. I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.
A. COG 10. I know marriages systems of other cultures.
*A. MOT 11. I am confident that I can socialize with locals in a culture that is unfamiliar to me.
*T. ABEH 12. I use pause and silence differently to suit different cross-cultural situations
T. MC 13. I check the accuracy of my cultural knowledge as I interact with people from different cultures.
*A. COG 14. I know the arts and crafts of other cultures.
A. MOT 15. I am confident that I can get accustomed to the shopping conditions in a different culture.
T. BEH 16. I vary the rate of my speaking when a cross-cultural interaction requires it.
A.T. COG 17. I know the rules (e.g., grammar) of other language
T. COG 18. I know the rules of expressing non-verbal behaviors in other cultures.
A. MOT 19. I am sure I can deal with the stresses of adjusting to a culture that is new to me.
T. BEH 20. I alter my facial expressions when a cross-cultural interaction requires it.
* Reaching statistically significant difference.
A: American participants’ scores are higher than Taiwanese’.
T: Taiwanese participants’ scores are higher than Americans’.
APPENDIX D
ONLINE LEARNING CHALLENGES AND SELF-EFFICACY SURVEY
Appendix D

Online Learning Challenges and Self-Efficacy Survey

1. Gender
   Male (1)   Female (2)

2. Age
   (   )—fill in the blank

3. What is your primary culture or racial identification?
   (1) Black   (2) White/Caucasian   (3) Latino   (4) Asians   (5) Native Americans   (6) Others

4. What is the most challenging issue you and your group members encounter during this online collaborative learning class?
   (                      )—fill in the blank

5. Given a scale of 1 to 5 (1: No efficacy at all; 5: Extremely strong efficacy), what is your self-rated computer efficacy in this online collaborative learning class? (The computer self-efficacy is defined as the individuals' beliefs about their abilities to competently use computers in the determination of computer use.)
   (1) (2) (3) (4) (5)

6. Given a scale of 1 to 5 (1: extremely negative; 5: extremely positive), what is your expectations of the overall outcomes (e.g. grades) of this online collaborative learning class?
   (1) (2) (3) (4) (5)

7. Given a scale of 1 to 5 (1: extremely negative; 5: extremely positive), what is your overall levels of satisfactions in terms of attending the cross-culturally collaborative projects in this online collaborative learning class?
   (1) (2) (3) (4) (5)

8. Please provide the overall comments (likes, dislikes, probable improvements in the future) of this online collaborative learning class and study.
   (      )—fill in the blank
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