

Cross-Cultural Collaborative Online Learning: If You Build it, Will They Come?

Sue-Jen Chen

Edward J. Caropreso

University of North Carolina Wilmington, USA

Chao-Li Hsu

Wenzao Ursuline College of Languages, Taiwan, Province of China

Junfeng Yang

Hangzhou Normal University, China

Abstract

This study, based on cultural and social constructivist learning theories, investigated the effects of implementation of the Cross-cultural Online Collaborative Learning (COCL) Model to guide educators in designing effective cross-cultural online collaborative learning environments and experiences. Twenty-eight Chinese and 37 U.S. students participated in online discussions involving cultural and instructional topics. An attitude survey was administered to assess students' overall attitudes, feelings, and opinions about their cross-cultural collaborative online learning experiences. The study results support the overall conclusion that if we "build it" students will "come" together.

Introduction

Global internet connectivity and online communication provide opportunities for people from different cultural, professional and personal backgrounds to work together as members of various groups. Academic institutions continue to pursue ways for students from diverse contexts to develop the knowledge and skills needed to succeed in 21st century global society. Students should learn and develop both cultural awareness and appropriate communication and collaboration skills to effectively interact with people from different cultures.

Although online education provides opportunities for culturally diverse teachers and learners to work together, participants' cultural contexts may influence behavior and affect interactions and learning in collaborative online learning situations.

In view of the need of a model to guide the design and development of an online learning environment and activities for cross-cultural collaborative learning, we first devised the Cross-cultural Online Collaborative Learning (COCL) Model grounded in social-cultural learning theories and based on empirical data (Chen, Caropreso, & Hsu, 2008; Chen, Hsu, & Caropreso, 2006). We then implemented the model to design an online course for U.S. and Chinese college students' collaborative learning delivered through Blackboard Vista.

The purpose of the study was to evaluate an implementation of the COCL Model in a cross-cultural online collaborative learning context. This paper presents the results of the study investigating the following questions:

1. What are students' attitudes, feelings, and opinions about their cross-cultural collaborative online learning experience?
2. What are the differences between U.S. and Chinese students in their cross-cultural collaborative online learning experience, if any?

Theoretical Framework And Related Literature

Individuals from different cultures engage in and expect different communication practices and behaviors during interactions in learning environments (Timonen, Kuittinen, & Pitkänen, n.d.). Understanding cross-cultural interactions involves studying links between culture and communication (Bonk & Cunningham, 1998; DeFleur & Ball-Rokeach, 1982; Parrish & Linder-VanBerschot, 2010; Uzuner, 2009; Vygotsky, 1978).

Culture and Perception

Individual knowledge construction is based on the combination of prior experience and social interaction with sophisticated and competent people with whom individuals interact through the use of language or socio-cultural dialogue (Duffy & Jonassen 1992; Jonassen, 1999; Vygotsky, 1978); the context in which learning occurs is foremost to the learning itself (McMahon, 1997). Culture is learned, therefore, culture becomes the context for teaching and learning. Culture reflects a set of common events, values, attitudes, beliefs and behaviors for any particular group of individuals. Such individual outcomes are the result of specific learning experiences (Hyun, 2006; Miraglia, Law, & Collins, 1999; Uzuner, 2009). Since education necessarily occurs within culture (Bruner, 1996), culture significantly influences instructional planning and design. Rothstein-Fisch, Trumbull, Isaac, Daley, and Perez (2003) reflected Vygotsky's (1978) perspective about the mediating role of language and social experience in the development of individual knowledge. They stated, "What counts as knowledge or knowing, methods of teaching, and means of evaluating students' learning are all culturally defined ... ways classroom activities are organized and ... teachers communicate reflect and foster certain cultural values (p.124)."

People behave according to their perceptions of the world. Cultural experiences affect social perception and therefore people's communication with each other, including the potential for misinterpretation based on social misperception (Rohrlich, 1983; Samovar & Porter, 2002; Wang, 2007). Oddou and Mendenhall (1984) noted that individuals demonstrate preferences for members of a perceived in-group over an out-group; that the basis for group identification may vary, including factors such as ethnicity, occupation, and religion; and an inverse correlation between frequency of contact between members of cultures and the amount of stereotyping.

Knowledge construction and person perceptions will be likely to influence subsequent learning, potentially further reinforcing perceived distinctions. Such socio-cultural influences could significantly affect teaching and learning in cross-cultural learning situations. Thus, the learning environment must be supportive and resourceful to facilitate knowledge construction and application (Chen, Hsu, & Caropreso, 2005).

Communication

How we come to know ourselves and our world involves complex social processes of communication (DeWine, Gibson, & Smith, 2000); this is also the fundamental context within which learning occurs. Broome (1981) noted that the expectation for communication differences appears to be the basis for most research and reflection on intercultural communication. Rothstein-Fisch et al. (2003) studied the potential for shifting teachers' cognitive orientation with respect to their students' cultural orientation from one of individualistic to a more collectivist orientation as the result of explicit training. They discovered that significant shifts in teachers' perspectives resulted from training in the socio-cultural norms and beliefs of their students' cultures, and these shifts in attitude and orientation lasted long beyond the period of the training in the study.

The communication context of internet-based virtual communication typically involves written rather than spoken interactions, which lack socio-cultural cues (Roald, 1999) and orderliness (Allwood & Schroeder, 2000) of face-to-face interactions. Understanding based on appropriate interpretation of print text will more likely occur when participants come to the situation with the required cultural capital to allow for mutual, reciprocal understanding (Roald, 1999). Even when participants strive for effective communication management, online written conversations were not comparable to conversations in the real world of face-to-face communications (Allwood & Schroeder, 2000). Rogers, Graham, and Mayes (2007) studied the potential influence of culture in asynchronous learning from the perspective of instructional designers. Their findings that instructors' awareness of the potential differences between cultures does not necessarily mean this knowledge is integrated into the design of online courses further supports the need for overt attention to the relationship between culture and communication.

Teng (2005) studied Taiwanese and U.S. students' online communication. Her findings suggest that a heightened sense of belonging to the learning environment and

confidence in communication competence led to a greater likelihood of acquisition of cross-cultural communication skills; also, an increased sense of belonging to the learning community led to heightened confidence during communication with others.

In another study of the potential cultural influences on learning and communication involving Chinese and Finnish human resource development practitioners' views in a cross-cultural e-learning course, Slotte and Tynjälä (2005) concluded that an effective learning environment required creating a learning context that supported communication and collaboration based on strong pedagogical insight and management. Since communication appears to be bound by cultural context, collaboration occurs only if communications were understood within the context and carried out through interactivity. The primary challenge for collaboration was the team members' failure to understand the cultures of their partners.

Cross-Cultural Online Collaborative Learning (COCL): A Model Overview

Constructivists propose that meaningful learning must involve authentic tasks that require intentional information processing and knowledge construction within the context of active collaboration between teacher and learners and amongst learners. A constructivist learning environment must provide opportunities and tools for learning and communication to facilitate interaction and collaboration (Jonassen, Howland, Moore, & Marra, 2003). Therefore, an effective cross-cultural online learning environment must be supportive and resourceful, providing experiences that facilitate individual knowledge construction and application. Also, effective cross-cultural online learning tasks and activities must provide opportunities for dynamic and reciprocal communication, interactions, and collaborations that facilitate knowledge co-construction between teacher and learners and among learners prior to and during instruction.

Based on Constructivist theory and empirical framework, we proposed the COCL model to guide the design of a cross-cultural online collaborative learning environment and activities (Chen et al., 2006). The following graph (Figure 1) illustrates the model's components and how these components interact.

The model addresses two major design components intended to support and facilitate learning: the learning environment and learning activities. Each component involves several significant features:

1. Designing a supportive and resourceful online learning environment by providing:
 - a. technical, learning, and social supports to build student competence and comfort with technology, instructional content, and members of the learning community, and
 - b. rich and appropriate resources to support learning needs.
2. Designing opportunities for dynamic and reciprocal learning activities, involving communication, interactions, and collaborations prior to and during instruction between instructors at both sites (teacher↔teacher), among students within the

cultural group and across cultural groups (student↔student), and between teachers and students within the same cultural group and across cultural groups (teacher↔student) to promote learning.

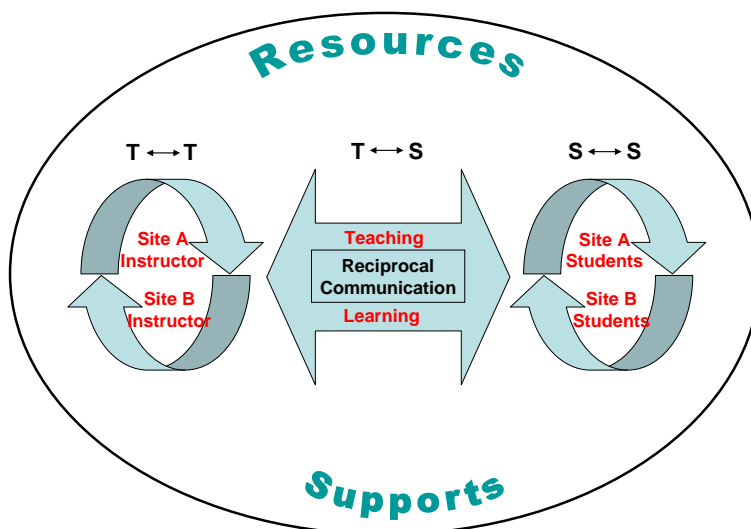


Figure 1. Cross-cultural Online Collaborative Learning Model.
T = Teacher, S = Student, ↔ = Interaction.

Implementation of the Model

The COCL model was used to design the learning environment and activities for an undergraduate unit in an online course hosted by a U.S. university. Chinese and U.S. students worked collaboratively to study culture and instructional technology issues delivered through Blackboard Vista. The model was implemented in four stages described below.

Stage 1: Preinstructional planning

Instructors must acquire knowledge of target learners and their cultural backgrounds so that they will be able to accurately and effectively interpret, respond to, and manage students' online communication. It is equally important for instructors to acquire collaborative skills to effectively work together to design and deliver instructional material and activities. The experience of working together may also foster the two instructors' communication and collaboration skills.

The instructors at both sites collaborated to identify the cross-cultural online collaboration learning goals, time frame, ideas for learning tasks and activities.

1. Learning goals were established based on 4.c. and 4.d. of U.S. National Educational Technology Standards for Teachers (NETS-T):
 - a. Promote and model digital etiquette and responsible social interactions related to the use of technology and information.
 - b. Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital-age communication and collaboration tools.
2. A collaboration period of one month was established due to Chinese and U.S. time and academic calendar differences.
3. The learning tasks and activities were designed to start with a course orientation followed by group learning and discussion of cultural and instructional technology issues, and conclude with a post-learning attitude survey.

Stage 2: Instructional planning

Collaborative planning involved the following instructor decisions:

1. Creating a photo class roster including student names, college ranks, majors, and personal photos, to be used in self-introduction during course orientation for community building;
2. Student self-enrollment into one work group consisting of 5-6 members of both cultures per group;
3. Using course orientation to provide Blackboard technical training, cultural orientation, and opportunity to get to know each other through student self-introduction;
4. Using Blackboard to house learning activities, for example asynchronous online forums for social activities (getting to know each other through self-introduction) and learning activities (Educational Technology Integration), blogs for cultural orientation, e-mail for post-instructional survey submission.

The U.S. instructor designed the course content and activities in Blackboard as the online learning environment. The Chinese instructor and students were enrolled in the Blackboard as guests to participate in the online collaboration.

Stage 3: Designing the learning environment and activities

Support systems. The intent of providing technical, learning, and social support systems was to build students' comfort with technology, instructional content and group membership. Several examples for each support are listed below.

Technical supports.

- Blackboard orientation and technical support sites provided by Blackboard Inc. and the Office of E-learning at the U.S. university.
- “Ask the instructor” and “S.O.S. Community Support” forums provided in Discussion Board for all class members to ask, give, and receive help from the instructor and other students.
- Step-by-step “how-to” job aid for each of the tools required for working in the course provided in the course Resources page.
- Tutorials and handouts for technology tools and software applications provided in the course Resources page.
- Technical FAQ, helpdesk contact information provided in the course Resources page.
- A customized online technical training module focusing only on the communication and production tools needed by the cross-cultural learning.

Learning support.

- Various learning resources such as Content Specific Resources, Online Library, Students Work Examples provided in the course Resources page.
- Groups formed to support each other’s learning.
- Provided online and offline instructor office hours.

Social support.

- Social Lounge and other discussion forums designed to provide opportunities for social presence and interaction. The Lounge is open any time for students to introduce themselves to get to know other students, drop a leisure note or carry out a continuous conversation, bid farewell, etc.
- Groups formed to provide social support to members of group and the learning community.
- Embedded collaboration and interaction in group-supported projects; assigning grades for team contribution and collaboration.
- Encouraged collaboration and interaction among group members to gain multiple perspectives and solutions.

Resources. The following are examples of resources provided to assist students in acquiring knowledge about cultures of group members as well as using tools to facilitate comfortable communication and collaboration for working together as a learning community.

- Language/communication resources: Online multi-lingual dictionaries, language translators, thesaurus, commonly used acronyms and idiomatic expressions, and virtual writing/editing centers.
- Culture/context resources: Providing online encyclopedias for culture-specific knowledge bases, Chinese and U.S. culture websites, videos, photos, etc.

- Learning content resources: Provided online tutorials for various kinds of training, and productivity tools (such as software applications) for completing assignments.

Course Orientation

The course orientation consists of Blackboard technical training, getting acquainted with the course site, getting to know other students, and cultural orientation.

Blackboard technical training and getting acquainted with the course site are designed in the same package to help students become familiar with Blackboard log-in procedures, Blackboard course site structure, tools to be used for learning and communication required by the course, and resources for technical help. All the activities are hands-on with reference resources.

Getting to know other students required students to post a message in the “Social Lounge” class forum for self-introduction, to greet the class and to respond to greetings posted by other members in the same group and at least three posts by other class members. This activity lasted for one week.

Cultural orientation was a blog that involved discussion and sharing opinions about cultural awareness and sensitivity, parent expectations, and cultural holidays. Students were provided with web resources related to these topics for discussion. Students were encouraged to find additional resources and to use their personal experiences in this discussion. Cultural orientation lasted for one week.

Learning Tasks and Activities

Students were required to complete assigned readings about integrating technology into curriculum and participated in a group forum to discuss the topic and share or compare the current state of educational technology integration in their respective countries. A set of discussion activity specifications together with some sample questions were provided to guide the discussion. This unit learning activity lasted for two weeks.

Stage 4: Instructional delivery

Modeling, coaching, and scaffolding instructional strategies were used to support delivery of instruction and manage learning activities through two-way communication, interaction, and collaboration between instructors (teacher↔teacher), among students (student↔student), and between teachers and students (teacher↔student) as indicated in Figure 1.

Frequent reciprocal communication flowed continuously between the instructors about the process and products of students’ learning; at the same time, two-way communication, interaction, and collaboration took place among students within the same cultural group and across cultural groups. During instruction, a learning

community was established through instructor and student communication and interaction at both sites between all participants.

Method

Participants

Undergraduate students from courses taught at a state university in the southeastern U.S. and a provincial normal university in China participated in this study using web-enhanced instruction involving online discussions about both cultural and academic topics. Sixty-five students (all members of all participating courses) took part in this research, including 28 Chinese (10 males and 18 females) and 37 U.S. (6 males and 31 females) students. Most U.S. students were classified as juniors, with some sophomores and seniors; ages ranged from late teens to mid-40s. Chinese students were designated as juniors, ages ranging from late teens to early 20s.

Instructional Activities

Instructional activities were jointly planned. Since instruction was delivered via Blackboard Vista hosted by the U.S. site and English was the principal language for communication, instruction was primarily delivered by the U.S. instructor. However, both instructors monitored and coached their own group's learning activities and managed local logistics. Time differences typically resulted in asynchronous online discussions to better accommodate students' schedules at both sites.

All students from both sites self-enrolled into one of ten groups consisting of 5-6 members: 2-3 Chinese and 2-3 American students per group. One week prior to formal instruction, Chinese students received Blackboard technical training and "getting acquainted with the course site" orientation, which American students had completed at the start of the semester. After Chinese students joined the class, all students were instructed to complete the "getting to know other students" activities by greeting each other at the Social Lounge, and to participate in the cultural orientation blog. Refer to the Course Orientation section for details.

Students then participated in the technology integration unit involving two weeks of group online learning and discussion. After the instructional unit, students bid farewell to each other at the Social Lounge.

Each instructor administered a survey to their respective classes at the conclusion of the online collaboration designed to assess student attitudes, feelings, and opinions about their cross-cultural, collaborative online learning, based on approximately four weeks of online interactions involving a combination of cultural, social and academic experiences.

Assessment

A mixed-method design involving the collection and analysis of both qualitative and quantitative data was used to address the research questions (Richey & Klein, 2007). A multi-part survey was designed to yield both data types.

The American instructor developed a two-part the survey that was administered to both classes to assess students' overall attitudes, feelings, and opinions about their cross-cultural collaborative online learning experiences. Part A provided quantitative data from responses to 14 five-point Likert scale items (5=Strongly Agree, 1=Strongly Disagree). The Chinese students' survey included an extra item, Q0: "I felt comfortable using English to communicate with my American team members." Part B asked students to use three adjectives to describe their overall cross-culture online collaborative learning experience, the basis for the qualitative data analyses.

Our first research question about students' overall attitudes, feelings, and opinions about their cross-cultural collaborative online learning experiences was addressed via a descriptive analysis of the discrete, ordinal, categorical data. Our second research question, assessing the potential differences in responses between the students related to country, was addressed via a Mann-Whitney U-test, a nonparametric test for two independent samples. Descriptive analysis of categorical data was used to reinforce and clarify results from the quantitative analysis.

Based on the implementation of the COCL Model, we expected positive reports about students' cross-cultural online experiences (The 1st research question); in addition, we expected the Mann-Whitney test to yield non-significant results, indicating no significant differences between these two groups (The 2nd research question).

Results

Table 1 presents the results for the attitude survey for U.S. and Chinese students, both overall and by country.

Table 1

Median and Mode for Survey Quantitative Questions

No	Survey Items	Median			Mode		
0	I felt comfortable using English to communicate with my American team members. (Chinese students only)						3 ^a
		All N=65	U.S. n=37	China n=28	All N=65	U.S. n=37	China n=28
1	I had no technological problem using blackboard for online learning and communication.	4.00	5.00	3.00	5	5	3

2	Course resources (e.g., utilities, tutorials, handouts, sample work) helped support my learning needs.	4.00	5.00	4.00	4	5	3 ^a
3	Critiquing blog showcase helped me gain different perspectives and broaden my knowledge.	4.00	4.00	4.00	4	4	4
4	Blog comments helped improved my work and learning.	4.00	3.50	4.00	4	4	4
5	Social Lounge helped acquaint me with class peers.	4.00	4.00	3.00	3	4	3
6	Cultural blogs helped foster cultural awareness for cross-cultural learning.	4.00	4.00	4.00	4	4	4
7	I had much experience working with students from other country before this cross-cultural online learning experience.	2.00	2.00	2.00	2	2	2
8	I felt I was connected with my group to talk and learn together online	3.00	3.00	3.00	4	4	4
9	I felt I was connected with the class to talk and learn together online	4.00	4.00	3.50	4	4	3 ^a
10	The discussion with foreign peers contributed to my learning of subject content.	4.00	3.00	4.00	4	3 ^a	4
11	This cross-cultural collaborative learning contributed to my life experience.	4.00	4.00	4.00	4	4	3
12	This cross-cultural collaborative learning helped expand my global perspectives.	4.00	4.00	4.00	4	4	4
13	I would like to have similar cross-cultural online discussions in other courses.	4.00	4.00	4.00	4	4	4
14	Overall, my cross-cultural online learning experience was positive.	4.00	4.00	4.00	4	4	4

Note. 3^a multiple modes occurred for 3 and 4. The table displays only 3, the smallest value.

Table 2 presents the summary results of the categorization of Part B qualitative data. We decided that an effective strategy to address our research questions would be to use three global categories to interpret students' descriptive data. We believe the two fundamental categories, "Positive" and "Negative," would be generally understandable; we included a third category, "Neutral," anticipating the use of adjectives that could not be clearly judged as representative of either category. We derived criteria for our interpretations of these three categories from Dictionary.com, a readily available online

English language resource that provides a wide array of inputs, including a variety of dictionary citations, word etymologies, and common usage.

After discussing specific criteria for judging terms to be either “positive” or “negative,” we independently rated all 169 terms; terms not clearly classifiable as either positive or negative were categorized as neutral. Our initial agreement rate was 94.6% (163/169 terms); we resolved differences by discussion resulting in 100% agreement on the categorization of all 169 terms.

Table 2

Percentage of Categorized Adjectives for Survey Qualitative Question

Response Categories	Response rates		
	Overall	U.S.	China
Positive	82.2% (139/169)	82.57% (90/109)	81.67% (49/60)
Neutral	11.24% (19/169)	9.17% (10/109)	15.0% (9/60)
Negative	6.5% (11/169)	8.26% (9/109)	3.33% (2/60)

Note. N = 169 terms (all but one U.S. participant provided 3 terms as per directions); U.S., n = 109; China, n = 60.

Discussion

The overall context for discussing our results reflects two important points based on Part A of the survey: Q0 (Chinese survey) indicates that Chinese students generally felt comfortable using English to communicate with U.S. peers, suggesting few perceived language constraints; Q7 (prior experience) indicated that both groups had similarly limited prior experience working with students from other cultures before this cross-cultural online learning experience, suggesting some degree of equivalence across participants in reactions to the implementation of the COCL Model.

Our first research question addressed students’ overall interpretations of their cross-cultural collaborative online learning experience. Survey results from both Parts A (Table 1) and B (Table 2) indicate that overall, students had very positive experiences. In particular, Part A Q9 (felt connected with the class), Q11 (contributed to life experience), Q12 (expanded global experience), Q13 (desire other similar online experiences) and Q14 (overall experience) clearly indicate that students across all groups believed that they significantly benefited from their collaborative online learning experiences. Part B results (Table 2) reinforce this interpretation, both overall and across countries, with greater than 81% of all adjectives being positive and less than 7% of all adjectives being negative; neutral terms typically described aspects of their experiences that were procedural or related to implementation without a clear evaluation or judgment. Examples of frequently occurring Positive adjectives included: interesting, fun, helpful, and valuable. Most Negative adjectives were typically stated only once; some examples include: boring, overrated, unsatisfied, and aggravating. Neutral adjectives, also typically stated only once, included: quick, project oriented,

enigmatic, and experienced. The COCL Model as implemented for this course appears to strongly contribute to positive learning experiences for both U.S. and Chinese students.

Several aspects of the COCL Model asked in Part A of the survey help clarify the overall results. For example, Q3 (Critiquing blog showcase), Q4 (Blog comments), and Q6 (Cultural blogs) reflect specific features of the model that contributed to students' overall positive experiences within and across cultural groups.

Our second research question addressed potential for culture-related differences in collaborative online learning experiences; we anticipated no differences based on the implementation of the COCL Model. As can be seen in Table 1, on 12 of 14 items (85.7%) students from both groups responded similarly; only two of 14 items resulted in significant differences between the two student groups by country, Qs 1 and 2. Overall this outcome reinforces the interpretation of generally positive influences of the COCL Model on students' learning experiences.

But, significant differences were detected for Q1 and Q2 based on the Mann-Whitney U test. Q1, related to technology experiences, revealed significant differences between U.S. and Chinese students, $U = 280.00$, $z = -3.32$, $p < .001$. Such differences may have resulted from the U.S. students' greater familiarity with Blackboard as the university's designated online learning system and they had used the system for learning in this course for more than 2 months before the Chinese students joined them. Chinese students were using Blackboard for the first time in their learning experiences. This difference in familiarity with the technology may have been reflected in Chinese students' degree of neutral ratings ($Mdn = 3$, $Mo = 3$). The relatively brief training introducing the Blackboard environment and tools before the collaboration began may have been insufficient to build needed comfort and skills in using technology for learning. Though U.S. students indicated significantly less technological difficulty, on average neither group appears to have perceived significant limitations related to Blackboard use.

Q2 results, relating to course resources, revealed significant differences in the perceived degree of support provided by available online resources, $U = 255.50$, $z = -3.69$, $p < .000$; Chinese students rated resources less positively. Many of the online resources were intended to support student learning for the entire semester, not just the period of cross-cultural collaboration. U.S. students were exposed to and potentially more familiar with online resources prior to their online collaborations with their Chinese partners, therefore, potentially having a more positive interpretation based on a longer-term exposure and opportunity to review, understand and apply these resources. Apparently, for the Chinese students resources not being directly used during the collaboration were perceived to be irrelevant and therefore not supportive of their learning. Despite the statistical difference, Chinese students on average rated course resources nearly as positively as U.S. students. Differences appear to be related to the degree of neutral ratings ($Mo = 3$) of course resources.

Conclusions

Cross-cultural collaborative online learning guided by COCL Model facilitates dynamic and reciprocal communication and interaction resulting in positive learning outcomes. The three support systems specified in the model must be implemented with sufficient time for training to build comfort with and skill in using technology to engage in communication and learning. In addition, providing sufficient time for members to engage in social activities will foster comfort and further interaction in online communication and learning. Students must be informed about the availability of resources that support learning and be required to use the resources as part of the learning activities. Selecting interesting and engaging topics will allow for increased interaction and enhanced communication and learning. Finally, learning tasks should be loosely-structured (no fixed answer) providing the opportunity for knowledge co-construction; students from different cultures can interact, collaborate, gain multiple perspectives and learn from each other.

Overall, our evidence supports the conclusion that if “we build it,” the cross-cultural online learning environment, guided by COCL Model, students will more likely than not have positive, engaged, reciprocal learning experiences that build on similarities and bridge differences to support their cooperative learning; they will “come” together under appropriately facilitating circumstances.

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About the Authors

Sue-Jen Chen is an Associate Professor of Instructional Technology in Watson School of Education at the University of North Carolina Wilmington. She has a Ph.D. in Educational Research focused on Instructional Systems from Florida State University. She teaches courses on instructional design and evaluation, instructional technology, and instructional video production. Dr. Chen's research interests include learning theories and application, online learning and communication, learning environment design, cross-cultural collaboration, and technology integration into teaching and learning. She can be reached at chensj@uncw.edu.

Edward J. Caropreso is an Associate Professor of Education in the Specialty Studies Department of the Watson School of Education, University of North Carolina, Wilmington. He has a MA and PhD in Educational Psychology from the University of Georgia, Athens. He teaches undergraduate and graduate courses on educational psychology, human development and learning, and educational research. His current research interests involve online learning, cognition and cognitive development, and teacher professional development. Eddie can be reached at caropresoe@uncw.edu.

Chao-Li Hsu is an Associate Professor of Foreign Language Education at Wenzao Ursuline College of Languages, Taiwan. She received her doctoral degree in Educational Research from Florida State University. She is also Director of the Center for Faculty Development at Wenzao where she tries to help faculty members use innovative teaching methods, apply instructional technology, produce digital materials, and engage in research in order to achieve excellence in teaching quality. She can be reached at 97004@mail.wtuc.edu.tw.

Junfeng Yang is a lecturer of Educational Technology in Educational Technology Center at Hangzhou Normal University, China. He is currently pursuing a doctorate of Educational Technology at Beijing Normal University. He can be reached at yangjunfengphd@gmail.com.