# Research paper

## A study of Chinese engineering students' communication strategies in a mobile-assisted professional development course

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## Abstract

The development of students' professional skills is an important issue in higher education in China. This research reports a 3-month study investigating engineering students' communication strategies (CSs) while they were interacting to do a 12-week mobile-assisted learning project, i.e., "Organizing and Attending a Model International Conference". This learning project was a major teaching module of the English course of Professional Applications, which used a blended teaching mode integrating face-to-face instruction and mobile learning. Sixty-seven students volunteered to participate in the study. The instruments included eight oral communication sessions, a questionnaire, stimulated recall interviews, the participants' WeChat exchanges, etc. Results showed that the participants used a variety of CSs when completing the academic learning project. Moreover, these CSs were closely related to the students' involvement in social interaction. Future research should focus on a longitudinal investigation of the amount of scaffolding that helps students transfer their communication strategies across tasks.

**Keywords:** English education, communication strategies, mobile-assisted language learning, academic performance.

## 1. Introduction

### 1.1. Background

The development of communication skills including interpersonal skills, management skills and teambuilding skills in undergraduate students has been a major concern in higher education in China. University students' ability to communicate effectively in print, in presentations, and in electronic media plays an important role in their success in the chosen profession.

According to *The National Outline for Medium and Long-term Education Reform and Development (2010-2020)* students are the center of education with competence building and well-rounded development being given the top priority. Guided by the above-mentioned policy released by the Ministry of Education in China, many universities in China have now used technologically supported English learning systems.

A computer-assisted language learning (CALL) system may be as large as a university-wide system or as small as a unit or individual in a classroom. Many CALL researchers and teaching practitioners have claimed that learners in a class with Internet enabled CALL have better opportunities for learning than those in the traditional approach of face-to-face instruction (e.g. Beatty, 2003; Blake, 2000; Blin, 2004; Jones, 2001; Smith, 2003). In support of this claim, Stockwell (2007) and many other researchers posit that there exists a complex interplay of language, culture and technology in language learning. Two decades ago, CALL researchers started to investigate the effects of mobile-assisted language learning (MALL) and found more MALL potentials because

of the flexibility offered to learners in and outside of the classroom (Godwin-Jones, 2011).

According to a survey by the China Internet Network Information Centre, in 2014, students using mobile phones accounted for 23.8% of the total netizens in China. Drawing on the recent research and practice in MALL, this paper reports a study investigating the communication strategies (CSs) used by a group of engineering students while they were interacting to complete academic tasks in an English course which used a blended mode of face-to-face instruction and mobile learning.

### 1.2. Theoretical framework

Linguistic Interdependence Theory (Cummins, 1979, 1991; Cummins & Swain, 1986) served as the theoretical framework for this study. The key concept of the Linguistic Interdependence Theory (LIT) is "transfer". In other words, there exists an underlying proficiency base which allows the transfer of literacy-based skills across languages.

In order to be able to explain the actual process of transfer, Cummins (1980, 1984) proposes two constructs of language proficiency: basic interpersonal communicative skills (BICS) and cognitive/academic language proficiency (CALP). BICS are a set of skills related to daily conversational skills in context-embedded situations in which direct contextual support is provided for producing or interpreting meaning. CALP refers to general context-reduced cognitive or academic skills such as linguistic skills, problem-solving skills, and literacy skills. Unlike BICS, CALP is more cognitively demanding and deals with the academic aspects of language usage including academic writing and speaking. According to Cummins and his colleagues, the underlying proficiency base allows BICS and CALP to transfer across languages and across modalities. Cummins' Linguistic Interdependence Theory has played an important role in second language education.

### 1.3. Literature review

The notion of communication strategy (CS) in a second language (L2) was first raised by Selinker (1972) when he identified the processes of interlanguage development. This has led to a series of systematic analyses of the definitions, descriptions and taxonomies of CSs as well as practical implications of CS research (e.g., Bialystock, 1990; Dörnyei & Scott, 1997; Faerch & Kasper, 1983; Kasper & Kellerman, 1997; Taron, 1980; Varadi, 1980). In this study, CSs are regarded as problem-solving devices. According to Dörnyei and Scott (1997), CSs are strategic language behaviours to handle three types of communication problems: (1) Own-performance problems (i.e., one realizes that what he/she has said is incorrect or only partly correct), (2) Other-performance problems (i.e., one finds something problematic in what has been said to him/her), and (3) Processing-time pressure (i.e., one needs more time to plan and process L2 speech). In this view, CSs, like other strategic devices, are regarded as conscious, deliberate, goal-oriented, planned, flexible, and self-regulatory.

In the past 10 years, the empirical and conceptual analyses of CSs have been expanded from the early investigation in the psycholinguistic field to the current sociolinguistic enquiry and now include the roles of institutional setting and the socio-political context in CS use. However, literature to date has mainly focused on the identification of L2 learners' CSs and the effectiveness of strategy training (e.g. Lafford, 2004; Lam, 2006; Omar, Embi & Yunus, 2012; Smith, 2003). Little has been done on how Chinese learners of English use CSs in mobile learning contexts.

The purpose of this study is to investigate the relationship between the acquisition of academic literacy and communication strategies in a mobile-assisted learning program. It is hoped that the analysis of students' involvement in their academic communication of this MALL program will bring new insights into English education in China.

The following were the research questions in the study:

1. What CSs do Chinese learners use when they do academic tasks?
2. To what extent do communicion contexts (classroom settings and mobile learning settings) affect L2 learners' CSs use?

## 2. Method

### 2.1. Site and participants

The study was conducted in a double-degree Joint Program between a Chinese university and a university in the UK. The teaching objective of the Joint Program was to help students to develop professional competence integrating knowledge, skills and values.

This program was designed to meet the specific needs of engineering students, i.e., using English to learn disciplinary content (see Figure 1).



Figure 1. Integration of language, knowledge and skills in the course of Professional Applications.

Being one of the core courses of professional development in this program, "Professional Applications" (PA) was offered to all the Year-2 students. PA was guided by the pedagogical theory of Task-Based Instruction (Nunan, 2004). In this course, professional knowledge and technical skills were introduced and practiced. Students were expected to do various kinds of the tasks/projects including a 12-week learning project of "Organizing and Attending a Model International Conference (MIC)" which consisted of three subtasks: two individual tasks of "Conference Paper Writing" and "Academic Presentation" and one team task of "Organizing a 1-day Conference". The team task of "Organizing a 1-day Conference" was an important annual event held in the school and attended by all the Year-2 students, the instructors and five to six invited speakers in the field of telecommunications. The teaching contents of related professional knowledge and skills were arranged accordingly with two hours' face-to-face instruction every week supplemented by group discussions using WeChat, one of the most popular social networking tools in China.

The study under discussion took place in the course of PA and covered a period of 3 months from March to May of 2016. "Organizing and Attending a Conference" was the focus of the study. The researcher was also the instructor of PA. Sixty-seven students volunteered to participate in this 3-month study. Among them, 35 were majoring in Telecommunications Engineering with Management and 32 in Internet of Things Engineering. All the participants had passed the national examination of College English Band 4, thus indicating they had an intermediate level of English.

### 2.2. Procedures

Four types of data were collected to identify CS use by the participants: (1) eight in-class oral communication activities (including group discussion and presentations), followed by 10 stimulated recall group interviews, (2) a 40-item questionnaire based on Dörnyei & Scott's (1997) Inventory of Strategic Language Devices, (3) the participants'

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WeChat exchanges while they were discussing their coursework, and (4) the participants' reflective reports and assignments. The stimulated recall group interviews, each lasting for about 30 minutes, were conducted in Chinese to avoid unnecessary communication difficulties. At the end of May, the participants were asked to respond to the questionnaire on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's alpha of the questionnaire was 0.778, indicating it was reliable. All the data were then transcribed and coded by the researcher and her research team. The transcription conventions were adopted from Duff (2000).

## 3. Results and discussion

In this study, we used both quantitative and qualitative analysis to gain more insight into the dynamics of communication strategies in a MALL setting. A total of 8-hour communication sessions and 5-hour interviews were recorded. The WeChat messages consisted of 18,241 words, 192 voice messages and 597 emoticons/pictures/videos. Based on Dörnyei & Scott's (1997) Inventory of Strategic Language Devices, the transcripts of eight oral communication sessions were analyzed and 16 CSs identified (See Table 1).

| | Types of CSs | Description | Examples of discourse markers | Frequency |
|---|---|---|---|---|
| 1 | Message abandonment | Leaving a message unfinished because of some language difficulty | "MIC? Ur…It's a meeting?… ## Okay". (With puzzled facial expression and frowns) | 336 |
| 2 | Message replacement | Substituting the original message with a new one because of not feeling capable of executing it. | (Retrospective comments in the stimulated recall interview. When talking about conference organization) "*I'm the char. I forgot how to say chengxuce ((conference program)). So I had to say something else*". (Translated by the researchers) | 245 |
| 3 | Circumlocution (paraphrase) | Exemplifying, illustrating or describing the properties of the target object or action. | "Dress code means you should wear shirts and suits...## like this." (showing a picture of their fellow students working as volunteers at Global Mobile Internet Conference 2015) | 424 |
| 4 | Approximation | Using a single alternative lexical item, such as superordinate or a related term, which shares semantic features with the target word or structure. | Use of "composition" or "essay" instead of "conference paper" | 245 |
| 5 | Use of all-purpose words | Extending a general, "empty" lexical item to contexts where specific words are lacking. | "the thing", "something like that", "bla, bla, bla" | 198 |
| 6 | Word coinage | Creating a non-existing L2 word by applying a supposed L2 rule to an existing L2 word. | "unsastified", "unlegal" | 88 |
| 7 | Literal translation (transfer) | Translating literally…from L1/L3 to L2. | "After I entered into this university…" Use of "meat eyes" to refer "naked eyes" | 398 |
| 8 | Foreignizing | Using an L1/L3 word by adjusting it to L2 phonology. | "That's all simida" (Use of the Korean word simida for stress.) "nani" (Japanese word for "what". Used to express curiosity or anger in many Chinese contexts.) | 88 |

| 9 | Code-switching | Including L1/L3 words with L1/L3 pronunciation in L2 speech. | "G si" and "G wu" ((Chinese equivalent for G4 and G5)) <br><br> "moni guoji huiyi" (Model International Conference) | 436 |
| 10 | Repair | Making corrections in one's own speech or other's performance | "Ladies and gentlemen. You're warmly welcomed...welcome." | 195 |
| 11 | Mime (non-linguistic / paralinguistic strategies) | Describing whole concepts nonverbally, or accompanying a verbal with a visual illustration. | Speaker 1: "Look, this part of presentation skills, nonverbal communication. (The speaker demonstrates using eye contacts and hand gestures.)...Is it clear?" <br><br> Speaker 2: (Nods and smiles) | 289 |
| 12 | Use of fillers | Using gambits to fill pauses ... in order to keep the communication channel open and maintain discourse at times of difficulty. | " Well, you know, ...(laughing) ..." | 165 |
| 13 | Repetition | Repeating a word or a string of words immediately after they were said. | Speaker 1: "One of the writing mistakes is redundancy..." <br><br> Speaker 2: "Redundancy"? <br><br> Speaker 1: "Yes, redundancy." | 210 |
| 14 | Appeal for help | Trying to elicit help from others directly or indirectly | (Turns to the group leader) "Can you email me the IEEE paper template?" | 321 |
| 15 | Asking for clarification | Requesting for more explanation. | "What do you mean?" | 254 |
| 16 | Expressing non-understanding | Expressing that one did not understand | "I'm sorry. I don't understand." | 132 |

Table 1. Description of CS use in the communication sessions.

As can be seen from Table 1, the participants used 16 types of CSs in their oral communication sessions. Moreover, results show high occurrences of "Code-switching" (F=436), "Circumlocution" (F=424) and "Literal Translation" (F=398).

The WeChat data showed similar types of CSs used by the participants except for Strategy 11 of "Miming". Because of the absence of face-to-face communication in WeChat interactions, the participants tended to use more frequently the compensatory strategy of mobile-supported emoticons, voice messages, etc. Table 2 presents the mean and standard deviations of overall CS use reported in the questionnaire data.

| CS Item # | Range | Minimum | Maximum | Mean | SD |
|---|---|---|---|---|---|
| 1 | 1.92 | 2.69 | 4.61 | 3.55 | 0.8 |
| 2 | 2.96 | 2.02 | 4.98 | 3.51 | 1.01 |
| 3 | 1.99 | 3.01 | 5 | 3.81 | 0.98 |
| 4 | 2 | 2.86 | 4.86 | 3.76 | 0.89 |
| 5 | 1.13 | 1.88 | 3.01 | 2.48 | 1.01 |
| 6 | 0.9 | 2.96 | 3.86 | 3.01 | 0.79 |

| | | | | | |
|---|---|---|---|---|---|
| 7 | 2.01 | 2.98 | 4.99 | 3.96 | 1 |
| 8 | 3.02 | 1.91 | 4.93 | 3.03 | 0.84 |
| 9 | 0.55 | 4.45 | 5 | 4.71 | 0.99 |
| 10 | 1.6 | 3.28 | 4.88 | 4.11 | 0.78 |
| 11 | 2 | 2.97 | 4.97 | 3.57 | 0.89 |
| 12 | 0.05 | 3.76 | 3.81 | 3.78 | 1 |
| 13 | 1.7 | 3.3 | 5 | 4.05 | 0.89 |
| 14 | 1.89 | 3.04 | 4.93 | 3.65 | 0.79 |
| 15 | 1.14 | 3.86 | 5 | 4.39 | 0.98 |
| 16 | 0.68 | 3.13 | 3.81 | 3.27 | 0.88 |

Table 2. Descriptive statistics of the CS use reported in the questionnaire.

The results indicated that the participants reported using the same types of CSs. However, they used different CSs when performing different tasks. A closer look at the further context of CSs, i.e., two or more turns preceding/following the turn(s) containing the discourse makers of CS usage revealed that the participants used those CSs not only for comprehension purposes (to overcome communication gaps) but also for interpersonal communication purposes. Data from the WeChat exchanges provided supporting evidences for the equally important roles of negotiating for meaning and communicating to maintain a friendly and supportive relationship. The following extract is a WeChat example of using the CSs of "Code-switching" and "Mime/paralinguisitic strategies":

1. Jigang (the group leader): *Dajiahao* (*Hi, everyone*)! We have reviewed all the papers. We'll soon announce the names of the authors who will present at the MIC.
2. Lily: Present at MIC?
3. Jigang: Yes, present at moni guiji huiyi (*Model International Conference)* simida.
4. Lily: Haosailei! (The word haosailei means "great" and has the pronunciation in Cantonese dialect. It is a popular Internet buzzword in China.)
5. Jigang: (follows Lily's message and posts a yellow smiley)
6. Jason: (follows with a thumbs-up emoticon)

Extract 1 from WeChat Group 1 (2016-04-18)
(Jigang, Lily and Jason are pseudonyms of the participants.)

In the above situation, the first communicator Jigang makes an announcement in the Class WeChat Group. The phrase of "Present at MIC" is repeated in the second turn. It is a signal for a problem in understanding the term MIC. Jigang interprets this as a request asking for clarification. So in the third turn, he rephrases the term using the Chinese equivalent "moni guoji huiyi". In the fourth turn, Lily shows understanding and appreciation by using a Chinese buzzword "haosailei". Other students join in the chat by adding more emoticons. In recent years, many foreign cultures and languages have been introduced into China. That might explain why some foreign words such as the Korean word "simida" (expressing stress) and the Japanese word of "nani" (expressing anger or curiosity) were frequently used in the participants' oral communication and in their WeChat exchanges.

It should be noted that although similar CSs were identified in two learning environments: oral sessions in typical classroom contexts and after-class group discussion through WeChat, data showed that there are some differences in strategy use between the two types of interaction. Due to the absence of face-to-face interaction

in WeChat, avatars and WeChat IDs were used for user identification and text messages were supplemented/replaced by emoticons, graphics, voice messages, short videos or hyperlinks. This was supported by the comments from the stimulated recall interviews and from the participants' reports.

To sum up, data analysis shows that the participants used a variety of L1-, L2 and even L3-based CSs to overcome communication gaps. However, they used different CSs in different situations and for different purposes. Some students paid more attention to getting their meaning across while other focused more on maintaining a supportive and friendly relationship.

## 4. Conclusions

In this paper, the researcher has attempted to answer two research questions by analyzing the data from a socio-cognitive perspective. Three conclusions can be drawn from the above discussion. First, the L2 learners used a variety of L1-, L2-, L3-based CSs when completing academic tasks related to conference communication, thus providing supporting evidences for the theory of Linguistic Interdependence. Second, they had the same repertoire of strategies to deal with various kinds of communication problems and to meet various kinds of task needs in both classroom settings and mobile-learning settings. Finally, they employed different strategies when doing different tasks and in different communication settings. The pedagogical implication of the study is that instructors should have CS training tailored to their students' professional needs. It is suggested that the direction for future research focuses on a longitudinal investigation of the amount of scaffolding that helps students transfer communication strategies across tasks.

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