Mandarin students' perceptions of multimodal interaction in a web conferencing environment: a satisfaction survey

Jun-Jie Tseng[1]

Abstract. A major indicator of whether online courses have been effective and successful is student satisfaction. Copious research points to lack of interaction as the most cited reason for student dissatisfaction. To improve this problem, new Computer-Mediated Communication (CMC) technology could be considered as an option to enhance the online learning platform because it can provide much more varied multimodal communication channels such as audio, video, text chat, images, graphic tools, and pre-programmed emoticons. To understand the quality of interaction in such an online learning environment, a 40-item questionnaire survey of student satisfaction was undertaken to gauge distance students' perceptions of the ways they interacted online with their teachers through multimodal communication channels. It was subsequently found that interactions through modal resources such as voice, video, image-enhanced texts, and graphics were perceived as important; and this aspect of online learning was also rated as satisfactory. Thus the present study should be seen as adding to the understanding of which communication channels are perceived to contribute to multimodal interaction in terms of student satisfaction, thereby making it a worthwhile contribution to research knowledge about student satisfaction of multimodal interaction in a web conferencing environment.

Keywords: student satisfaction, multimodal interaction, web conferencing technology, online language teaching and learning.

1. National Taiwan Normal University, Taipei, Taiwan; jjtseng@ntnu.edu.tw

1.   Introduction

Student satisfaction with online learning is a complex and multidimensional construct. Research has suggested that lack of interaction is the most cited reason for student dissatisfaction (Bolliger & Halupa, 2012; Sun, 2014). This problem could be improved with the advancement of Computer-Mediated Communication (CMC) technology. Compared to asynchronous CMC technology, synchronous CMC technology such as web conferencing technology can foster spontaneous communication and interaction because it essentially provides a number of multimodal functionalities, e.g. audio, video, visuals, text, and emoticons (Guo, 2014; Kear, Chetwynd, Williams, & Donelan, 2012), and these multiple modes can contribute positively to communicative language learning (Wang, 2008).

The issue of course satisfaction of foreign language learners in online courses or programs is not well documented. In particular, not much attention has been paid to their satisfaction with multimodal interaction in CMC environments. The purpose of this study was to determine the level of distance students' satisfaction with the ways in which they interacted with their online teachers through multimodal communication channels afforded by a web conferencing platform in the context of learning Mandarin as a foreign language. It is hoped that new insights could be provided into how students rate multimodal resources and tools in online language teaching and learning in terms of student satisfaction.

This exploratory study attempts to open up a field of enquiry into the following questions:

- How did the distance students perceive multimodal interaction in web conferencing learning environments in terms of satisfaction rating as opposed to importance rating?

- How satisfied were the distance students with the ways they interacted with their teachers through multimodal communication channels?

2.   Method

2.1.   Research setting

The present study was carried out at a national university in Taiwan, which has run a Mandarin training online program since 2013. Web conferencing technology, i.e. Adobe Connect, was adopted as the online learning platform for the Mandarin

training online program. The method in which online courses were conducted was generally in the form of 1:1 tuition. Figure 1 presents a screenshot illustrating the variety of communication channels available on the web conferencing platform: (1) the microphone, (2) the webcam, (3) text chat, (4) pre-programmed emoticons, (5) the shared screen (PowerPoint, images, and MP3 audios), and (6) whiteboard tools (pointer, pencil, and highlighter).

Figure 1. The Adobe Connect interface
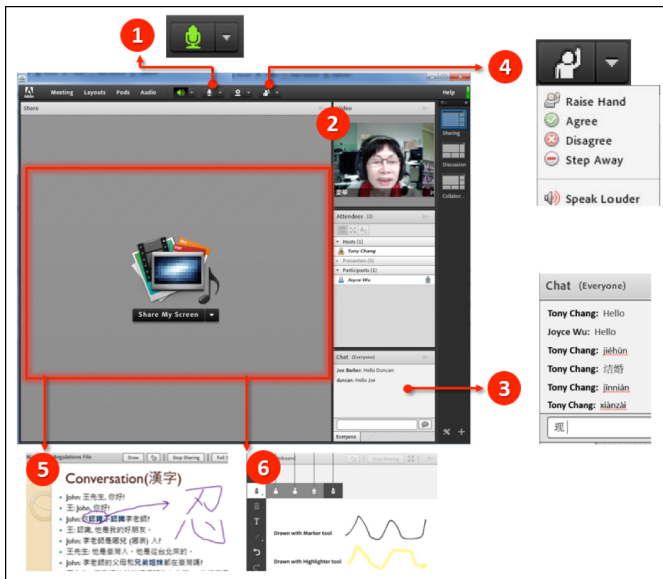
2.2.   Data collection and analysis

For the purpose of this study, the researcher designed a questionnaire comprising 40 items in total: (1) six items seeking background information, (2) 12 items seeking the comparison between importance rating and satisfaction rating, (3) 18 items seeking the level of student satisfaction with multimodal interaction, and (4) four items seeking overall ratings. The questionnaire was created using Google Forms and made accessible on the Internet from April 24th, 2015 through to June 18th, 2015. An e-mail message was delivered to all registered distance students who had minimally completed a 20-hour online course, i.e. 95 students. They were invited to voluntarily fill in the web-based questionnaire.

The collected data was then analysed and the following information was compiled:

- importance-satisfaction analysis;

- descriptive statistics for satisfaction level.

3. Results and discussion

Of the overall population of 95 students enrolled in the Mandarin training online program, survey responses were received from 31 students, a response rate of 32.6%. The survey asked respondents to rate the importance of, and their satisfaction with, the ways they interacted with their teachers through multimodal communication channels, namely the microphone, the webcam, text chat, pre-programmed emoticons, PowerPoint materials, and whiteboard tools. While a rating of 1 represented low importance, a rating of 7 represented high importance. Table 1 provides a summary of the mean responses for importance ratings and satisfaction ratings respectively.

Table 1. Mean (and standard deviation) scores of importance-satisfaction ratings

Questionnaire item	Satisfaction (Mean 0-7)	Importance (Mean 0-7)
The way my teacher interacts with me through the microphone.	6.55(1.31)	6.58(1.31)
The way my teacher interacts with me through the webcam.	6.58(1.31)	6.45(1.41)
The way my teacher interacts with me through text chat.	6.16(1.55)	5.32(2.24)
The way my teacher interacts with me through pre-programmed emoticons.	4.13(3.24)	3.39(3.06)
The way my teacher interacts with me through PowerPoint materials on the shared screen.	6.03(2.12)	6.52(1.36)
The way my teacher interacts with me through drawing tools in the whiteboard.	6.32(1.58)	6.45(1.36)

One way to examine importance-satisfaction data, as mentioned by Palmer and Holt (2009), is "the importance-satisfaction grid (Aigbedo & Parameswaran, 2004) – where the importance rating is plotted on the vertical axis and the satisfaction rating is plotted on the horizontal axis" (p. 105). Figure 2 shows the survey data visualized in an importance-satisfaction grid, which is "divided into quadrants using the grand mean for all importance ratings [(5.75)] as a vertical divider and the grand mean of satisfaction ratings [(5.95)] as a horizontal divider" (Palmer & Holt, 2009, p. 105). As further pointed out by Palmer and Holt (2009, p. 105), the quadrants are generally interpreted as follows:

- Quadrant A: high importance and low satisfaction

- Quadrant B: high importance and high satisfaction

- Quadrant C: low importance and high satisfaction

- Quadrant D: low importance and low satisfaction

Figure 2. Importance-satisfaction grid
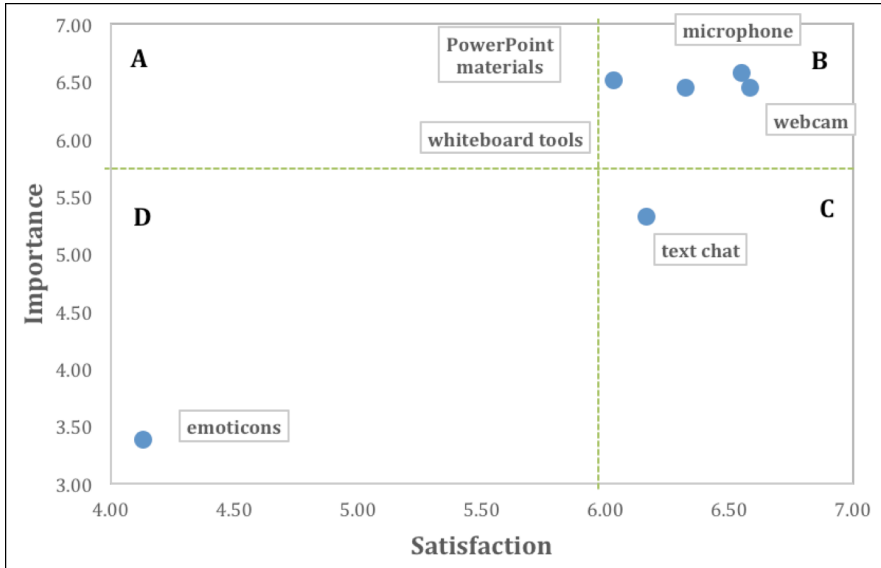
The ways of multimodal interaction that the respondents were satisfied with and rated highly included their interactions via the microphone, the webcam, PowerPoint materials, and whiteboard tools. This meant that the online teachers provided consistently good work because the students thought their interactions through the multimodal communication channels of audio, video, imaged-enhanced texts, and graphics were rewarding. This finding offers additional support for Cummingham, Fägersten, and Holmsten's (2010) study, in which teachers and students were able to find successful ways to communicate through channels such as voice, video, and whiteboard tools. Furthermore the present study confirmed that these aspects of multimodal interaction were recognised and appreciated by the students.

It was seen that lower value was given to the communication channels of text chat and pre-programmed emoticons in student-teacher interactions in web conferencing environments. The finding regarding the insignificant use of text chat contradicts

Kear et al.'s (2012) study, in which students preferred to use text chat instead of voice channel because they could make little verbal contributions. In addition, the result related to the unnecessary use of pre-programmed emoticons is inconsistent with Kozar's (2015) study, which found that emoticons were particularly useful when complementing speaking in online tutoring of English as a foreign language.

The survey also contained questionnaire items that sought the level of student satisfaction on a scale of 0-7. Overall, the respondents rated their satisfaction highly, with mean values mostly between 5 and 7. They were generally satisfied with the ways they interacted with their teachers through practically all multimodal communication channels except for emoticons. This finding reinforces the results of the importance-satisfaction ratings shown above. Of the 18 satisfaction items, 10 items received high ratings between 6-7. These items were constructed to deal with student satisfaction in relation to pedagogical scenarios via the use of multimodal communication channels such as the microphone, the webcam, PowerPoint materials, and whiteboard tools. In contrast, the items with lower mean ratings involved the use of emoticons, reinforcing the result stated above that the respondents perceived interactions through pre-programmed emoticons as not necessarily helpful.

4.   Conclusion

The present study provides an early snapshot of how distance students perceive their satisfaction with multimodal interaction in a web conferencing environment, pointing towards interesting questions for future research, such as a survey completed by a large sample pool over an extended period and a survey supplemented by way of open-ended questions or interviews. Nevertheless, the present study makes a worthwhile contribution to research knowledge about student satisfaction of multimodal interaction in a web conferencing environment. The present study adds to the understanding of which communication channels are perceived to contribute to multimodal interaction in terms of student satisfaction. This research offers the foreign language profession some sense that integrating web conferencing technology into the foreign-language curriculum is perhaps a satisfactory and promising option with palpable benefits for multimodal interaction.

5.   Acknowledgements

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Critical CALL – Proceedings of the 2015 EUROCALL Conference, Padova, Italy
Edited by Francesca Helm, Linda Bradley, Marta Guarda, and Sylvie Thouësny

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