

Experimenting Choices of Video and Text Feedbacks in Authentic Foreign Language Assignments at Scale

Xiwen Lu

Brandeis University
415 South Street
Waltham, MA 02453
xiwenlu@brandeis.edu

Xiaolu Xiong

Worcester Polytechnic Institute
100 Institute Road
Worcester, MA 01609
xxiong@wpi.edu

Neil Heffernan

Worcester Polytechnic Institute
100 Institute Road
Worcester, MA 01609
nth@wpi.edu

ABSTRACT

With the development of “flipped classroom” concept and increasing usage of web-based learning platforms in foreign language teaching field, the effectiveness of online instant feedbacks come into researchers’ focus, and whether or not should teachers provide choices of feedback medium also becomes an issue. The following study assesses the effects of feedback medium as well as the effectiveness of offering students feedback medium choices. This in-progress large-scale randomized controlled trial is conducted using ASSISTments, an adaptive online tutoring platform.

Author Keywords

E-learning, Flipped Classroom, Language Learning, Feedback, ASSISTments, Randomized Controlled Trial.

ACM Classification Keywords

H.5 Information Interfaces and Presentation; J.5 Arts and Humanities; K.3.1 Computer Uses in Education.

INTRODUCTION

In the E-learning and adaptive tutoring field, many studies have done to compare video based learning and text based learning, mostly in the STEM education field. Kay and Edward [4] and Balslev et al. [1] compared VBL (Video-Based Learning) supported by a cognitive approach with text-based learning. The results showed statistically significant differences in improving learners’ skills. Moreover, the authors reported that learners liked the followed cognitive approach in which knowledge was generated through step by step learning in video lectures. Ostrow and Heffernan [8] assessed the effects of feedback medium within a randomized controlled trial conducted using ASSISTments, and results suggest that video feedback enhances learning outcomes and is well perceived by student users. Most findings are focused on the STEM

Paste the appropriate copyright/license statement here. ACM now supports three different publication options:

- ACM copyright: ACM holds the copyright on the work. This is the historical approach.
- License: The author(s) retain copyright, but ACM receives an exclusive publication license.
- Open Access: The author(s) wish to pay for the work to be open access. The additional fee must be paid to ACM.

This text field is large enough to hold the appropriate release statement assuming it is single-spaced in Times New Roman 8-point font. Please do not change or modify the size of this text box.

Each submission will be assigned a DOI string to be included here.

fields, and few randomized controlled trials are done in the field of second language education. Will the results also be proved in the field of second language education field?

Following the trend of “flipped classroom”, more and more videos and web-based homework support systems have been adapted to foreign language teaching. Many empirical studies have been designed to determine the effect of video-based instruction on foreign language learning. Secules et al. [9] compared teacher-managed videotaped instructional materials featuring native speakers in everyday situations to more traditional pedagogical methods involving a variety of classroom exercises and drills, and found no significant difference between the two conditions in students’ learning of grammatical structures. Herron et al. [2] conducted a longitudinal experiment to compare video based instruction and text supported instruction. Results showed a significant difference on the listening test, in listening comprehension between the experimental and control conditions at the conclusion of one year of French instruction, and no difference was found in grammar comprehension. Lin and Tseng [5] and Hsu et al. [3] conducted two studies to investigate the effect of different video-based learning designs to improve English language skills of K-12 students. The findings indicated that the groups which used VBL outperformed the other groups. However, very little research exists on the effectiveness of video feedbacks in the foreign language e-learning platform.

The survey results in Ostrow & Heffernan’s study suggest that video feedback is well perceived by students, and 83% of students reported that they would at least somewhat prefer ASSISTments to use video more often. However this study didn’t go deeper and investigate which kind of feedbacks would students prefer during the homework, and how would their choice affect their learning results.

Thus, our research questions are:

1. Are second language learning outcomes enhanced when scaffold feedback is delivered using video rather than text?
2. Do students have preferences on choosing from video and text feedbacks?
3. Will students with choices learn better than those who are not offered a choice?

METHODS

Participants

Participants are Chinese language learners in colleges and secondary schools in the U.S. We are expecting 600 students to enroll in this experiment.

Materials

Studies have shown that Mandarin is synchronically a typical VO (verb + object) language, in terms of text distribution of VO and OV orders (Sun & Givon, 1985[10]). Most Mandarin language learners also take Mandarin as a typical SVO language. However, there are several structures which do not follow SVO order. Language learners often make mistakes when dealing with a non-SVO structure, and for this reason, non-SVO structures are often key content in Chinese language classes. Normally word order is the same in Chinese for questions and statements. However, a question pronoun can appear in statements other than questions. When a question pronoun is used in a statement with 都(dou) appearing after it, it simply means “all” or “none” in the sense of being all-inclusive or all-exclusive. [6] Commonly used patterns of this structure are as follow:

- a) 我什么中国菜都爱吃。
Wo shenme Zhongguo cai dou ai chi.
I love to eat all Chinese food.
- b) 什么中国菜我都爱吃。
Shenme Zhongguo cai wo dou ai chi.
I love to eat all Chinese food.
- c) 这些菜我哪个都不喜欢。
Zhexie cai won age dou bu xihuan.
I don't like any of these dishes.
- d) 谁都喜欢这个颜色。
Shei dou xihuan zhege yanse.
Everyone likes this color.
- e) 这个颜色谁都喜欢。
Zhege yanse shei dou xihuan.
Everyone likes this color.

The rules can be explained as 1) When Question word is used as a subject, the basic structure is QW + 都(dou) + V + Object; 2) When Question word is used as an object, the basic structure is Subject + QW + 都(dou) +V, and the subject and Question word can switch; 3) If you would like to mention that the statement you make is in a certain domain/range, the domain/range should be mentioned at the beginning of the sentence, no matter the question word is used as a subject or object. Structure: Range/domain + Subject + QW + 都(dou) + V; Range/domain + QW + 都(dou) + V.

While the structure “Question Word + 都(dou)” is the one that all students should have learned at the beginning level,

the teachers we were working with identified it as a challenging structure for the students, and, in fact, many students were not sure how to correctly use this structure, even in advanced level. So in this study, we take this grammar structure as the target structure.

Design

The ASSISTments platform is used to compare the delivery methods of feedback messages.

Participants are asked to answer a set of 6 questions on ASSISTments which requires reordering given words to form a sentence to properly indicate the English meaning. Each three questions are in a section, and each question reflects one of the three rules. 6 questions are numbered as A1, B2, C3, D1, E2, F3.

All questions and feedbacks are available at [7]. We listed below one question as an example, which reflects rule 2 (When Question word is used as an object, the basic structure is Subject + QW+都(dou)+V, and the subject and Question word can switch):

English meaning: I like all colors.

Word bank: 什么(shenme), 颜色(yanse), 我(wo), 喜欢(xihuan), 都(dou)

Correct answer:

1) 我什么颜色都喜欢。(Wo shenme yanse dou xihuan.)

2) 什么颜色我都喜欢。(shenme yanse wo dou xihuan.)

All questions are of similar difficulty. Students will receive feedback when given an incorrect response or if students request to see a hint. Group one receives video feedback, group two receives text feedback, students in group three can choose feedback medium from video and text, and the Control group does not receive any feedback.

Linear Order	1	2	3	4	5	6
Group 1	A1-VF	B2-VF	C3-VF	D1-VF	E2-VF	F3-VF
Group 2	A1-TF	B2-TF	C3-TF	D1-TF	E2-TF	F3-TF
Group 3	A1-VF/ TF	B2-VF/ TF	C3-VF/ TF	D1-VF/ TF	E2-VF/ TF	F3-VF/ TF
Control group	A1-NF	B2-NF	C3-NF	D1-NF	E2-NF	F3-NF

Table 1. Group design with question types and feedback types

Video content was designed to mirror textual feedback in an attempt to provide identical assistance through both mediums. Each video simply featured the lead researcher

reading a feedback message while referring to the grammar structure on a screen.

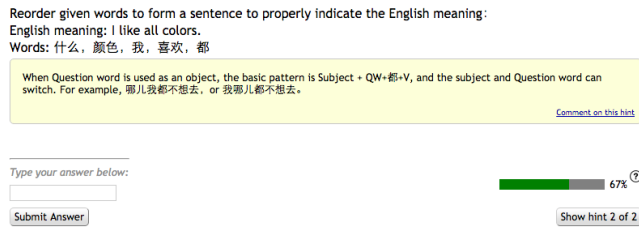


Figure 1. Text feedback for question 1

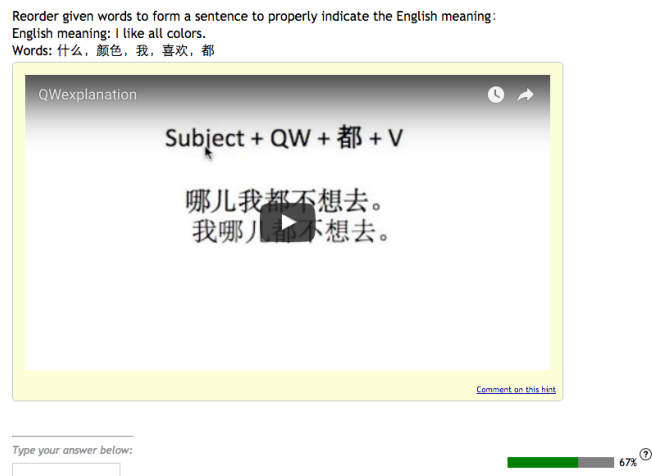


Figure 2. Video feedback for question 1

To make sure students know both types of feedbacks as asked to choose from them, an instruction is shown before all students receiving questions.

A post-test is given to all participants right after the assignments. Post-test contains three questions each reflecting one of the three rules, and it is also be assigned to participants through ASSISTments.

Procedure

The problem sets are assigned to students as either classwork or homework. Students are free to work at their own pace. When completing the introduction, students are randomly assigned to one of the four groups. Data will be logged by ASSISTments while students doing practices, which includes elements such as correctness, response time, attempts, hints requested, and more.

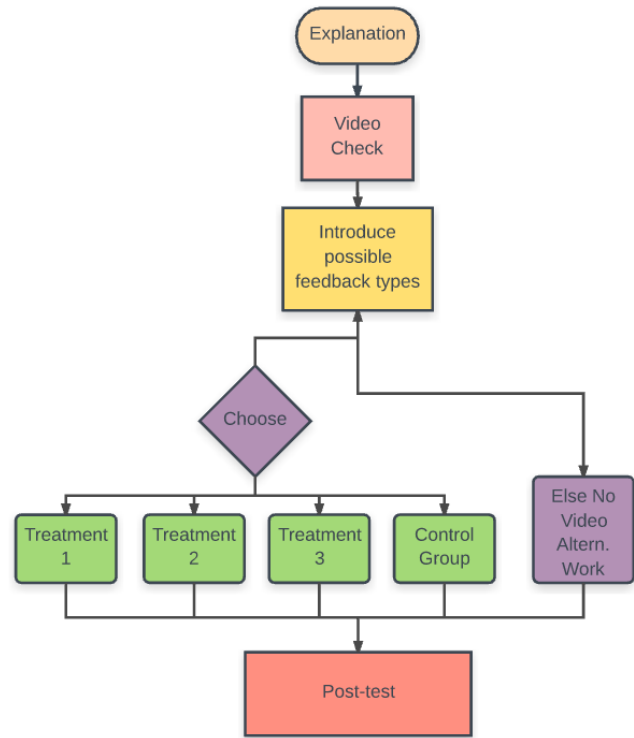


Figure 3. Procedure chart

Hypotheses

Based on former research, our hypotheses are:

1. Group 1 which receiving video feedbacks gets better grades comparing to group 2 and control group.
2. Participants in group 3 prefer video feedbacks to text feedbacks.
3. Group 3 which can choose feedback types gets the best grades as they receive personalized hints.

REFERENCES

1. Thomas Balslev, Willem S. de Grave, Arno M. M. Muijtjens, and Albert J. J. A. Scherpbier. 2005. Comparison of a text and video case in a postgraduate problem-based learning format. *Medical Education* 39, 11: 1086-1092.
2. Carol Herron, Matthew Morris, Teresa Secules and Lisa Curtis. 1995. A Comparison Study of the Effects of Video-Based versus Text-Based Instruction in the Foreign Language Classroom. *The French Review* 68, 5: 775-795
3. Ching-Kun Hsu, Gwo-Jen Hwang, Yu-Tzu Chang, and Chih-Kai Chang. 2013. Effects of Video Caption Modes on English Listening Comprehension and Vocabulary Acquisition Using Handheld Devices. *Educational Technology & Society* 16, 1: 403-414.

4. Robin Kay, Jaime Edward. 2012. Examining the Use of Worked Example Video Podcasts in Middle School Mathematics Classrooms: A Formative Analysis. *Canadian Journal of Learning and Technology* 38, 3.
5. Chih-cheng Lin, Yi-Fang Tseng. 2012. Videos and animations for vocabulary learning a study on difficult words. *Turkish Online Journal of Educational Technology* 11, 4: 346-355.
6. Yuehua Liu, et al. 2008. *Integrated Chinese Level 1 Part 2, 3rd edition*: 216-217. Cheng & Tsui publisher.
7. Xiwen Lu, 2016. Video and Text Feedbacks Study data. <http://researches.chinesereadingmaterials.net/>
8. Korrin S. Ostrow, Neil T. Haffernan. Testing the Multimedia Principle in the Real World: A Comparison of Video vs. Text Feedback in Authentic Middle School Math Assignments. In *Proceedings of the 7th International Conference on Educational Data Mining*. 2014.
9. Teresa Secules, Carol Herron, Michael Tomasello. 1992. The Effect of Video Context on Foreign Language Learning. *The Modern Language Journal* 76-4: 480-490.
10. Chao-Fen Sun and Talmy Givón. 1985. On the So-Called Sov Word Order in Mandarin Chinese: A Quantified Text Study and Its Implications. *Language* 61, 2: 329-35