Teaching Phonetics with Online Resources

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ABSTRACT. *This study aims to explore the effectiveness of utilizing online resources to assist the learning of Phonetics for college students. Students of language majors often lament about learning Linguistics, and generally regard the introductory courses in Linguistics as difficult and dreary tasks. Among the subfields of Linguistics, Phonetics, with its many unfamiliar terminologies, is often complained as a subject of extreme difficulty. These complaints may result from the fact that students tend to view Linguistics as "an abstract and desiccated ritual," rather than "a social, intellectual activity which is engaging and rewarding" (Battenburg and Lant, 2003). Thus, the first step to stimulate students' interest in Linguistics would be to persuade the students to view Linguistics as a living practice. Fortunately, the advancing technology enables teachers to apply various pedagogical models within the classroom and to think about teaching Linguistics in different ways. The current study thus experimented whether an online interactive simulation of human articulation could enhance students' learning in Phonetics. The subjects of this study were a class of English major college students who took An Introduction to Linguistics as a required course. During the weeks of studying Phonetics, in addition to the usual classroom lectures, the teacher supplemented the lessons with a website which demonstrated human articulations through interactive activities. A pretest was conducted after the classroom lectures but before the students were introduced to the website. After the test, the students were instructed to practice on the website for at least 30 minutes. A posttest was then administered to the students, and the test results were compared with those of the pretest. A questionnaire regarding students' perception on the effectiveness of the supplementary material was also answered by the participating subjects. The test results revealed that the students showed improvement in their phonetic knowledge after practicing on the website, and their answers to the questionnaire illustrated that they generally found the website useful for their learning.*

1. Introduction

Linguistics is one of the required courses for language major students in most colleges since such knowledge is deemed necessary for the learning of languages. However, students of these majors often lament about learning this subject, and generally regard the introductory courses in Linguistics as difficult and dreary tasks. As Battenburg and Lant (2003) point out, these complaints may result from the fact that students tend to view Linguistics as "an abstract and desiccated ritual," rather than "a social, intellectual activity which is engaging and rewarding." Thus, the first step to stimulate students' interest in Linguistics should be to persuade the students to view Linguistics as a living practice. As Laurillard (1993: 1-2) suggested, a teacher should "create the conditions in which understanding is possible, and the students' responsibility is to take advantage of that." Fortunately, the advancing technology enables teachers to increase and improve pedagogical methods constantly. Likewise, teachers of Linguistics can make use of new technology to implement various pedagogical models within the classroom and to think about teaching Linguistics in different ways.

A general introduction course to Linguistics usually covers many subfields of Linguistics. Among these subfields, Phonetics probably receives relatively more complaints due to its many unfamiliar terminologies. The current study thus experimented whether an online interactive simulation of human articulation could facilitate students' learning in Phonetics. By using the mediated resource to supplement the class instruction, the experiment not only intends to explore whether and how effective such media is in assisting Phonetics learning, but also to determine whether such alternative teaching method can enhance students' interest and motivation in learning Phonetics.

2. Research process

This study intends to investigate whether students' learning achievements in Phonetics vary due to different instruction methods (traditional lectures versus animation demonstrations) and media (Power Point presentation versus animation flash), and, if yes, how effective such online resources can be in assisting students' learning.

2.1 Subjects

The subjects of the current study were a class of 2nd-year English major students in a technological university in Taiwan, who took *An Introduction to Linguistics* as a

required course for two semesters. Phonetics was taught in the second half of the first semester. There were 51 students in this class, including 41 female and 10 male students. However, five of the students (3 female and 2 male) either did not follow the instructions closely or were absent on the day of the pretest. Therefore, the total number of valid subjects is 46 (38 female and 8 male).

2.2 Questionnaire

A questionnaire on "Effectiveness of Learning Phonetics with Online Resources" was also answered by the participating subjects in order to inspect the students' perception on the effectiveness of the supplementary material. The 5-point Likert scale is adopted in the questionnaire; the subjects can choose from five choices to express their opinions on the questionnaire items: "strongly agree," "agree," "neutral," "disagree," and "strongly disagree," representing 5, 4, 3, 2, and 1 points respectively. A total of 22 items were developed, analyzed, and arranged for the questionnaire.

The questions are divided into four domains: design of the platform and the flash animation, usage of the flash animation, attitude toward incorporating flash animation into the learning of Phonetics, and finally, learning effectiveness of incorporating flash animation into the learning of Phonetics.

2.3. Experiment processes

Phonetics was taught for about two weeks in the second half of the semester of the *Introduction to Linguistics* course. During the first week of teaching Phonetics, the teacher lectured and demonstrated with Power Point Material the basic phonetic knowledge, mainly the places and manners of articulation and the classes of sounds. The students were required to study the textbook and PPT material after class. The next week they were quizzed on what they had learned in the previous class. The quiz results were used as the pretest of the study. After the first quiz, the students were introduced to the University of Iowa website which demonstrated human articulations through flash animations and interactive activities. As a supplementary part of the class, the students were instructed to visit and practice on the aforesaid website for at least 30 minutes before the next class meeting. A second quiz was administered in the next week for the same material. The test results were taken as the posttest and compared with those of the pretest. The pre- and post-tests contained different questions, but they were of the same types and were of similar difficulty. The students were also asked to answer the questionnaire on "Effectiveness of Learning Phonetics with Online Resources" and to comment on their experience of using the website to assist their learning of Phonetics. In addition, the students also reported how many times they had visited the abovementioned website and the total duration.

3. Data analyses and results

Table 1 below summarizes the number of times the students visited the designated website and the amount of time they spent on the site to practice with the flash animation as reported by the students. The information indicates that, of the 46 valid samples, the average number of times they used the website is a little more than twice, and the average amount of time they used the web flash as a means for studying Phonetics is about 78 minutes. One student reported that she visited the website 18 times, and the maximal time of watching the flash animation was reported to be 6 hours (360 minutes).

Table 1   Students visiting the website (times and minutes)

	Number	Minimum	Maximum	Average	SD
Times	46	1 time	18 times	2.3 times	2.7
Minutes	46	10 min.	360 min.	78 min.	71

Tables 2 and 3 analyze the results of the pre- and post-tests. As shown in Table 2, the average score of the pretest is 58.22, whereas the average score of the posttest is 84.26. The mean difference shows that the students made a progress of 26.04 points averagely between the two quizzes. Furthermore, the standard deviation of the posttest is 14.35, lower than that of the pretest, which is 25.52. The result in Table 2 shows that the students not only obtained higher average score in the second quiz but also performed more concordantly, as the gap between students' scores were more narrowed.

Table 2   Mean scores of pre- and post-tests

	Number	Lowest score	Highest score	Mean	SD
Pretest	46	12.00	100.00	58.22	25.52
Posttest	46	34.00	100.00	84.26	14.35

The pair t test of score difference of pre- and post-tests in Table 3 reveals that the significance of F value is 0.000<0.05, and the significance of pair t test with the same mean reaches $p=0.000<0.001$.

Table 3   Pair t test summary of score differences of pre- and post-tests

		Pretest	Posttest
Pretest	Pearson relevance	1	.556**
	Significance (two-tailed)		.000
	Number	46	46
Posttest	Pearson relevance	.556**	1
	Significance (two-tailed)	.000	
	Number	46	46

In terms of individual performance, 40 out of the total 46 students made progress between the two quizzes; in other words, 87% of the students improved their scores on the second test, and the improvement ranged from 4 to 68 points. However, there were also 2 students whose scores remained the same, and 4 students did worse in the second test, with one even decreasing 26 points.

The collected questionnaires were also analyzed by using SPSS. The statistic results of the questionnaire, shown in Table 4, obtained the average mean score ranging from 3.65 to 4.24, indicating the respondents agree or strongly agree with the questions. More detailed analyses are discussed in the following.

Table 4 Descriptive results of students' responses to the survey questionnaires

No.	Statement	Mean	SD
A	**Design of the platform and the flash animation**		
1	I think the overall effect of the flash animation was vivid.	4.15	.515
2	I think the places of articulation in the flash animation were clear and easy to understand.	4.22	.513
3	I think the manners of articulation in the flash animation were clear and easy to understand.	4.22	.513
4	I think the voiced/voiceless distinction in the flash animation was clear and easy to understand.	3.98	.614
5	I think the animation effect of the flash animation influenced my willingness of watching such flash.	3.98	.577
B	**Usage of the flash animation**		
6	I think it was easy to use the flash animation to assist Phonetics learning.	4.10	.567
7	I think using the flash animation to assist Phonetics learning had the advantage of not being limited by time.	4.20	.582
8	I think using the flash animation to assist Phonetics learning had the advantage of not being limited by space.	4.15	.729

9	I think using the flash animation to assist Phonetics learning had the advantage of multi-functions.	4.13	.542
10	I think the animation effect of the flash animation motivated me to learn Phonetics.	3.93	.772
C	**Attitude toward incorporating flash animation into Phonetics learning**		
11	I hope the flash animation can be used to assist the teaching of Phonetics in the future.	4.24	.639
12	I think incorporating the flash animation into Phonetics gave me motivation to learn Phonetics.	4.02	.774
13	I liked learning through the flash animation better than the traditional lectures.	4.00	.667
14	Learning through the flash animation gave me a different view toward Phonetics.	3.87	.687
15	I think it was interesting to learn Phonetics through the flash animation.	4.04	.595
16	I think learning through flash animation motivated me to study computer multimedia.	3.85	.666
D	**Learning effectiveness of incorporating flash animation into Phonetics learning**		
17	I think the flash animation enhanced my understanding of the places of articulation.	4.17	.529
18	I think the flash animation enhanced my understanding of the manners of articulation.	4.20	.500
19	I think the flash animation enhanced my understanding of the distinction of voiced/voiceless.	4.11	.640
20	I think the flash animation enhanced my understanding of the Phonetics terminologies.	3.89	.640
21	I think the flash animation enhanced my understanding of Phonetics as a whole.	4.02	.614
22	I think watching the flash animation enhanced my abilities in applying computer software.	3.65	.674

The statistical results of the effectiveness survey questionnaire are analyzed according to its four domains. Domain A is concerned about design of the platform and the flash animation. This domain contains 5 questions that obtained relatively high mean scores, ranging from 3.98 to 4.22, indicating that students showed a high level of agreement regarding the statements made. In particular, Question 2 ("I think the places

of articulation in the flash animation were clear and easy to understand") and Question 3 ("I think the manners of articulation in the flash animation were clear and easy to understand") both obtained a high mean score of 4.22, indicating that students found the flash animation's demonstrations of places and manners of articulation clear and easy to understand. However, students seemed less satisfied with the demonstration of voicing, as expressed by the 3.98 score of Question 4 ("I think the voiced/voiceless distinction in the flash animation was clear and easy to understand").

The 5 questions in Domain B (Usage of the flash animation) obtained mean scores ranging from 3.93 to 4.20, which indicate that students experienced a high level of agreement regarding the statements. In general, students agreed that learning Phonetics through the web flash had the advantages of "easy to use" (Question 6), "not being limited by time" (Question 7), "not limited by space" (Question 8), and "multi-functions" (Question 9). However, the relatively lower mean score of Question 10 ("I think the animation effect of the flash animation motivated me to learn Phonetics") reveals that students' motivation in learning Phonetics was not as much elevated by the animation effect.

Domain C, "Attitude toward incorporating flash animation into Phonetics learning," consisted of 6 questions that obtained mean scores ranging from 3.85 to 4.24, which indicates that students possess high levels of agreement and positive learning attitudes toward the web flash. Most noticeably, Question 11 ("I hope the flash animation can be used to assist the teaching of Phonetics in the future") obtained the highest mean score 4.24, indicating that students acknowledged the usefulness of the web flash and suggested it be used for future Phonetics instruction. Questions 12, 13, and 15 all obtained moderately high scores (4.02, 4.00, and 4.04 respectively), representing students' positive attitude toward the usage of the flash animation. More specifically, they considered learning Phonetics through the flash animation interesting, motivating, and better than traditional ways of teaching. They also expressed that their view toward Phonetics was somehow improved through the mean score 3.87 of Question 14 ("Learning through the flash animation gave me a different view toward Phonetics").

The 6 questions in Domain D (Learning effectiveness of incorporating flash animation into Phonetics learning) obtained mean scores ranging from 3.65 to 4.20, indicating that students were positive about incorporating flash animation into Phonetics learning and agreed that it was very effective and enhanced their understanding of various aspects of Phonetics. More specifically, Questions 17, 18, 19, and 21 obtained mean scores 4.17, 4.20, 4.11, and 4.02 respectively, indicating students believed the flash animation helped improve their understanding of the manners and places of articulation, voicing, and of Phonetics as a whole. But they seemed to regard

the web flash less helpful with the Phonetics terms (Question 20). Question 22 ("I think watching the flash animation enhanced my abilities in applying computer software") obtained the lowest mean score 3.65 among all the questions. This may reflect the fact that the computer application of this particular web did not apply fancy, high-tech animation.

4. Conclusion

To sum up, both the test comparison and the statistic results of survey questions indicate that the flash animation helped students' learning of Phonetics. Many studies have pointed out that computer-assisted simulation and learning activities for language learning can help enhance students' performance. The results of the current study show that such educational goals can also be achieved in the instruction of Linguistics courses, confirming the effectiveness of such blended teaching and learning models. The findings of the study are discussed and presented as follows.

1. Students showed improvement in their understanding of the basic phonetic knowledge, and made progress in the tests.
2. Students found the demonstrations of the flash animation clear and easy to understand, especially of the places and manners of articulation, but less so of the distinction of voicing.
3. Students indicated that learning Phonetics through the web flash had the advantages of easy to use, not being limited by time or space, and multi-functions.
4. Students showed positive learning attitudes toward the usage of the flash animation; they considered the web flash useful for their own study and suggested it be used for future Phonetics instruction. More specifically, they considered learning Phonetics through the flash animation interesting, motivating, and better than traditional ways of teaching. They also expressed that their view toward Phonetics improved after using the web flash.
5. Students agreed that incorporating flash animation into Phonetics learning was very effective and enhanced their understanding of various aspects of Phonetics. In particular, students believed the flash animation helped improve their understanding of the manners and places of articulation, voicing, and of Phonetics as a whole. But it seemed less helpful with Phonetics terminologies.

It should be noted, however, that the current study was implemented to one class of 51 students. Due to the relatively small sample, the results can not be generalized to the whole population.

References

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