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Speech Fluency Through Computer-Assisted Instruction

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Abstract: This study aimed to reduce the frequency and severity of disfluency in the English language through computer-assisted instruction of Grade 10 students in a public school in Bulacan. The experimental method, which includes experimental activities, was used to analyze if the use of SCAI significantly affects the student level of speech fluency. Also, the researchers use a survey questionnaire to measure the level of acceptability of computer-assisted instruction in learning the English language that will enhance the speech fluency of the students. The respondents were fifty-eight (58) students. The data gathered in the study were tallied, analyzed, and tested using weighted mean, standard deviation, and T-test as statistical tools. This study's primary concern was determining the level of acceptability of Speech Fluency through Computer-assisted Instruction (SCAI) software. A survey questionnaire examined the level of acceptability of the Grade 10 students in terms of Program Instructions, User-Interface, User-Control, and Accuracy. The assessment of the acceptability of the SCAI in teaching Speech Fluency was achieved using the five-point Likert scale with the corresponding description. The overall mean of 4.95, obtained from the students' evaluation, was the descriptive interpretation of "perfectly acceptable." The respondents were convinced that SCAI software could be an effective tool in speech fluency lessons. Another major concern was the effect of SCAI software on the level of speech fluency of the Grade 10 students. The data compared the pre-test and post-test results using the Paired Sample T-test under a 90% level of confidence. The level of speech fluency was divided into Four indicators: pronunciation, pitch, timing, and emphasis. The T-test statistical procedure revealed that SCAI had a major impact on speech fluency as shown by pronunciation $t(57) = 19.17$; $p = .000$, pitch $t(57) = 26.50$; $p = .000$, timing $t(57) = 22.97$; $p = .000$, and $t(57) = 22.79$; $p = .000$. It was evident that there was an improvement in the respondents' speech fluency using computer-assisted instruction (SCAI). The research reveals that Using a SCAI in teaching speech fluency is highly accepted by the students and significantly affects the level of speech fluency of the students and helped to enhance their ability to speak clearly.

Keywords— Computer-Assisted Instruction, Speech Fluency, Experimental, SCAI

1. INTRODUCTION

Fluency in language means speaking the language itself quickly. It is essential in communication, sending messages accurately and making discourse well. In learning a second language (English), the speaker must be articulate, pronounce the words correctly, and convey a statement's correct meaning. It plays a significant role in communication to understand the message and content of any delivered information. The feeling or emotions of the speaker can also be understood if a language is fluent. Fluency also brings self-confidence, which will uplift the self-esteem of the students who are not too good in communication. Fluency in speaking has a significant effect on the listener; it could attract their attention, leading to the understanding of the lesson, and the message conveyed. The researchers, who studied speech fluency, will find ways and procedures to speak fluently in English, our Second language, that will help the learners to speak the language confidently and raise the level of fluency here in the Philippines.

As stated in a journal World Englishers (2007), the Philippines has become one of the major centers for outsourcing due to its tradition of bilingual education, like the society of America and the cheap labor market. That is why fluency in English was one of the demands and needs of most of the call center industry. Another study was made by Chun (2009), Focusing on the routine experiences at a Texas high school. The study explores how fluent English-speaking students at the Korean and Filipino American colleges draw on language assets correlated with Asian immigrants. For that reason, attending to generational identity is essential, even though frequently oversimplified, social-sized in transnational as mentioned in the study that everyday interactions have a significant effect on fluency in a language. Moreover, fluency can be practiced alone by speaking repeatedly and correctly, the word and statement.

Nowadays, most of the youth were using a computer to play games, search for everything and anything they wish to search, and use social media to send messages. They were spending too much of their time using computers, for they believed that doing so would make our daily endeavors easier. As stated in a study by Mathes, Torgesen, & Allor (2001), Computers offer flexibility without an additional time burden, and also as stated by Lee & Vail, (2005) that the computer can be a great supplemental tool. This study will support Computer Assisted Instruction (CAI) that can use in studying and learning as stated on research if designed expertly, according to Chambers et al., (2008) computer programs provide teachers with a model of effective pedagogy, which could increase student achievement For the learners. As stated by Lonigan et al., (2003) Computer-Assisted Instruction (CAI) will provide active participation and interaction immediate (and corrective)

feedback. As cited in the study of Macaruso, Hook,&McCabe (2006), students engage in exciting and motivating activities that receive many opportunities to repeatedly practice skills to build fluency and enhance learning in a surrounding that is not threatening or embarrassing. The researchers found out that nowadays, students were not able to pronounce words correctly, because they were spending their time using modern technology instead of delivering the discourse verbally. They are using social media to express themselves, so they are not too familiar with the proper or correct pronunciation of a word or intonation of a statement.

Concerning their on-hand engagement in the use of technology, they are experiencing a high level of interactivity. It may lead to improving and developing a high level of fluency. With the use of Computer-Assisted Instruction (CAI), the learners may imitate the intonation and proper way of saying a word, phrase, or statement virtually. Through Computer-Assisted Instruction (CAI), Filipino students may increase their level of fluency in Speech. It has a significant role in the teaching and learning process of all learners who are willing to extend their time and effort to be fluent in English.

2. OBJECTIVES OF THE STUDY

The general objective of this study is to analyze and improve the level of speech fluency and acceptability of Grade 10 students using Speech Fluency through Computer-Assisted Instruction software (SCAI).

Specifically, it sought answers to the following questions:

1. What is the level of acceptability of SCAI in terms of:

1.1. Program Instructions

1.2. User-Interface

1.3. User-Control

1.4. Accuracy

2. How may the level of speech fluency of the respondents be described in terms of:

2.1. Pronunciation

2.2. Pitch

2.3. Timing

2.4 Emphasis

3. Is there a significant effect of Speech Fluency through Computer-Assisted Instruction (SCAI) on Grade 10-students' level of speech fluency?

3. MATERIALS AND METHODS

The study utilized an experimental research method. It attempted to determine the effectiveness of the SCAI in improving students' speech fluency among grade 10 students.

The experimental method is believed to be the most prestigious method used to assess the relationship between two variables (Travers, 1978). The experimental use to answer the research questions involved the collection of two or more data from the average class with the attempt to determine the effectiveness of the SCAI between the sets of data using pre-test and post-test. The researchers use their software entitled SCAI with a series of activities and have its scoring of the level of speech fluency to determine the effectiveness of SCAI to the speech fluency of the students. The researchers also use a validated survey questionnaire to assess the level of acceptability of the said software.

The population is the entire pool from which a statistical sample is drawn (Investopedia, 2019). The participant for this study was Grade 10 students. It is grouped into three (3) sections, namely, Integrity, Wisdom, and Peace. Section Integrity has 46 students; Wisdom with 45 students and Peace has 45. With a total population of one hundred thirty-six (136) students.

The researchers' sampling procedures used Slovin's formula researchers found the study's accurate sample size. It is a sample size formula for prudence and a finite population (population less than 1,000). Slovin's formula used when nothing is about the behavior of a population is known at all. The respondents were randomly selected in the experimental procedure and answered the survey questionnaire in their respective houses. The researchers explained the purpose of the study as well as their rights as participants. According to Polit and Beck (2006), as well as Burns and Grove (2001), convenience sampling makes use of readily available research respondents; for example, patients waiting to be seen in a clinic. This sampling approach should be used with caution since the respondents may be atypical and may be defined in a biased way. To prevent bias, only respondents who met the inclusion criteria were selected.

The data gathering instrument of this study was the software SCAI, a software designed for English pronunciation and oral skills training of the Audio-lingual method and communicative approach. Another research instrument used by the researchers was the Survey form.

The first instrument was to determine the students' level of speech fluency during pre- and post-test using SCAI. It contained a series of activities like speech drills that the learners will imitate in terms of pronunciation, pitch, timing, and emphasis. The SCAI software system scored a recorded dialogue of a learner who repeated the given words, phrases, and sentences in the computer microphone.

The second part was allotted on the researchers' survey questionnaire, which includes questions on the level of acceptability of SCAI by the students in the English language.

The researchers personally came and conducted the instruments to ensure a hundred percent recovery of authentic data. The researchers explained the instructions thoroughly to follow Grade 10 students ahead of time and make sure that the students will have their full

concentration while doing and evaluating the pre-test and post-test activities using SCAI. The students were given enough time to do the pre-test and post-test activities. The time allotted for the said activity is 10 minutes, considering the time for reading. Lastly, responses were categorized, tallied, tabulated, and encoded.

The researchers followed an ethical consideration in this study. This study involved the profound revelation of practicing professionals; to respect their privacy and permit for honesty response. The researcher has secured all names and identities. Another ethical attention is to avoid the predisposition of the researchers to the respondents.

The study used quantitative data. The data collected from the students were tallied and tabulated to determine the effectiveness and acceptability of the SCAI in teaching speech fluency. It enabled the researchers to arrive at the accurate result using sample size only. The results of the pre-test and post-test from the experimental group and the result of the survey questionnaire were analyzed and interpreted using the following tools: (1) mean, (2) standard deviation; (3) T-test. The above-mentioned statistical tools were used to show the difference between pre- and post-test results in two sections and the acceptability of SCAI.

The survey questionnaires were segregated to get the results of the evaluation of the SCAI software. The ratings for each indicator were tallied, and the arithmetic means were computed. Arithmetic means for the four criteria were also determined. The overall mean was to acquire and interpreted following the description of the five-point Likert scale used in the instrument.

4. RESULTS AND DISCUSSIONS

The analysis and interpretation of data gathered using the appropriate statistical treatment and tools. These are presented in tables following the sequence of research problems regarding the analysis and improvement of the level of speech fluency and acceptability of Grade 10 students using the Speech Fluency through Computer-Assisted Instruction (SCAI).

Level of Acceptability of Speech Fluency through Computer-Assisted Instruction (SCAI).

The level of acceptability of SCAI was measured using a Likert scale in four categories, which are Program Instructions, User-Interface, User-Control, Accuracy.

Table 1. Mean of Acceptability of Speech Fluency through Computer-Assisted Instruction.

SCAI Features	Mean	Level of Acceptability
1. Program Instructions		
1.1 The software instructions are clear.	4.93	*Perfectly Acceptable*
1.2 The directions for proceeding to the next phase are clear.	4.98	*Perfectly Acceptable*
1.3 Enough instruction is provided on how to enter responses.	5.00	*Perfectly Acceptable*
1.4 The instructions can be skipped or recalled as needed.	5.00	*Perfectly Acceptable*
Program Instructions	**4.98**	***Perfectly Acceptable***
2. User-Interface		
2.1 Smooth transitions of frames are present.	5.00	*Perfectly Acceptable*
2.2 The graphics and sounds serve a definite purpose appropriate to the intended audience.	4.97	*Perfectly Acceptable*
2.3 Background and text color are appropriately combined.	4.95	*Perfectly Acceptable*
2.4 The sentence and phrase are suited for the speech level of the learner.	5.00	*Perfectly Acceptable*
User-Interface	**4.98**	***Perfectly Acceptable***
3. User-Control		
3.1 Enough time to read and absorb the text is given.	5.00	*Perfectly Acceptable*
3.2 Students can see their scores after taking a test.	5.00	*Perfectly Acceptable*
3.3 Students can easily exit the program at any time.	5.00	*Perfectly Acceptable*
3.4 Students do not get lost while using the software.	4.97	*Perfectly Acceptable*
User-Control	**4.99**	***Perfectly Acceptable***
4.Accuracy		
4.1 The software detects the correct Speech of the students.	4.90	*Perfectly Acceptable*
4.2 The feedback provided by the computer is clear.	4.91	*Perfectly Acceptable*
4.3 The software contains a learning task that is appropriate for the learning competency of the students.	5.00	*Perfectly Acceptable*
4.4 This software addresses the Speech fluency problems of the students.	5.00	*Perfectly Acceptable*
Accuracy	**4.95**	***Perfectly Acceptable***

The acceptance level of SCAI is measured using four features: program instructions, user-interface, user-control, and accuracy. The acceptance level of the program instructions feature is perfect or highly accepted by the respondents with a mean = 4.98. The SCAI program instructions are clear, understandable, and user-friendly. In a user-interface feature, it is also perfect or highly accepted by the respondents with a mean = 4.98. The SCAI interface presented has smooth transitions of frames, interactive sounds, designs, and graphics, and the Speech used is suited for the learners' level. User-control is also perfect or highly

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accepted by the respondents with a mean = 4.99. Students have enough time to finish the program, assess their scores to identify the weak and strong speech fluency indicators, and easily exit the program anytime. The accuracy features of the SCAI was evaluated by the respondents as perfectly or highly accepted, as revealed by mean = 4.95. The software detects the correct Speech of the students and gives feedback on the student's speech performance.

This result was similar to the study of Bayonito (2015) that Computer Software is "highly acceptable" as perceived by the students. The respondents also positively considered that Computer software can be used as teaching and learning materials, which primarily motivates learners through the effective use of graphics, animations, and other interface elements.

Level of Speech Fluency of the respondents

Table 2. Level of Speech Fluency of the respondents in Pre-test Mean and Standard Deviation.

Speech Fluency Indicators		Mean	SD	Level of Speech Fluency
I.	Pronunciation	76.76	2.58	Fairly Satisfactory
II.	Pitch	76.41	2.11	Fairly Satisfactory
III.	Timing	76.44	2.92	Fairly Satisfactory
IV.	Emphasis	76.41	2.25	Fairly Satisfactory
	Mean	**76.51**		**Fairly Satisfactory**

The respondents are evaluated with four speech fluency indicators on the pre-test. These are pronunciation, pitch, timing, and emphasis. The speech fluency level of the respondents is fairly satisfactory with mean = 76.51. At ten items in each speech fluency indicator, the students scored with an average of 7-8 items with mean scores pronunciation mean = 76.76, pitch mean = 76.41, timing mean = 76.44, and emphasis mean = 76.41.

Table 3. Level of Speech Fluency of the respondents in Posttest Mean and Standard Deviation

Speech Fluency Indicators	Mean	SD	Level of Speech Fluency
1. Pronunciation	84.10	2.20	Satisfactory
2. Pitch	84.28	2.18	Satisfactory
3. Timing	85.00	2.20	Very Satisfactory
4. Emphasis	85.09	2.25	Very Satisfactory
Mean	**84.62**		**Very Satisfactory**

After using the SCAI program, students are evaluated with the same four speech indicators. The post-test results showed that the level of speech fluency is very satisfactory, as revealed by the mean = 84.62. At ten items in each speech fluency indicator, the students scored with an average of 8-9 items with mean scores pronunciation mean = 84.10, pitch mean = 84.28, timing mean = 85.00, and emphasis mean = 85.09. This implies that the SCAI program contributes to improving the respondents' speech fluency, as revealed by the pre-test and post-test results.

Effect of SCAI to Respondents Level of Speech Fluency.

Table 4. Speech Fluency Pre-test Post-test Mean Difference and Standard Deviation.

Speech Fluency Indicators	Mean Difference	SD	t	df	p-value (sig. 2 tailed)	Interpretation
1. Pronunciation	-7.34	2.92	19.17	57	.000*	Significant
2. Pitch	-7.86	2.26	26.50	57	.000*	Significant
3. Timing	-8.55	2.83	22.97	57	.000*	Significant
4. Emphasis	-8.67	2.90	22.79	57	.000*	Significant

Table 4 revealed the effects of SCAI to respondents' level of Speech Fluency. These data compared the pre-test and post-test results using the Paired Sample T-test under a 90% level of confidence. The level of speech fluency is divided into four indicators: pronunciation, pitch, timing, and emphasis. The mean differences of the four indicators are Pronunciation MD = -7.34, Pitch MD = -7.86, Timing MD = -8.55, and Emphasis = -8.67. These mean differences implied that the respondents perform better on the post-test. The SD values of pronunciation SD = 2.92, Pitch SD = 2.26, Timing SD = 2.83, and emphasis SD = 2.90 showed that the data on the pre-test and post-test are consistent and close to each other. The statistical treatment t-test showed that SCAI has a significant effect on speech fluency as revealed by pronunciation $t(57) = 19.17$; $p = .000$, pitch $t(57) = 26.50$; $p = .000$, timing $t(57) = 22.97$; $p = .000$, and emphasis $t(57) = 22.79$; $p = .000$. The respondents' speech fluency has been improved through computer-assisted instruction (SCAI). This result was consistent with the result of the study of Janpla (2015) Findings indicate that successful computer-assisted instruction had substantially improved post-test scores after computer-assisted instruction was learned. Also, the subject was highly pleased with the use of Machine Supported guidance. So it can be inferred that this computer-assisted instruction build could be used as an effective self-learning method.

5. CONCLUSIONS

Experiencing difficulties in learning speech fluency in the English Language is inevitable. It is both pleasurable and challenging at the same time. Speech fluency, however, is necessary to deliver the discourse of the message. The students' difficulty in learning speech fluency varies on how

they perceive the target language. Thus, the study Speech Fluency through Computer Assisted Instruction was conducted to develop the speech fluency of the Grade 10 students.

Based on the summary of findings, the study, Speech Fluency through Computer-Assisted Instruction (SCAI), comes up with the following.

Using a computer in teaching speech fluency is highly accepted by students. The Program Instructions, User-Interface, User-Control, and Accuracy are the essential parts of software that we need to develop good software in the teaching and learning process.

2. The finding shows that the software can accurately determine the students' Pronunciation, Pitch, Timing, and Emphasis. It shows that SCAI software can detect the students' level of speech fluency and enhances the students' level of speech fluency.

3. Based on the results catered by the researchers. The pre-test and post-test results show that the student's level of speech fluency is significantly affected by using the SCAI. It also shows that using Computer-Assisted Instruction can help the students enhance their ability to speak clearly.

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