Text to Speech Software for Improving Pronunciation of Graduation Level Students

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Abstract:

Present study investigates the effectiveness of Text to Speech (TTS) software for improving pronunciation of Graduation level students. This study was an attempt to scrutinize the efficacy of Text to Speech Software in decreasing the fear of the learners towards learning correct pronunciation. It is an experimental research. Two groups, twenty students each, were selected after a pre-test. Experimental group was taught English pronunciation through Text to Speech Software while the control group was taught using conventional teaching method. After this experimental study of twenty one days, both groups took post-test. Post-research questionnaire was also administered for experimental group students. Data was analysed statistically through SPSS version 21 for Windows. Comparison of results proves the effectiveness of Text to Speech Software. It was concluded that the integration of Text to Speech Software in pedagogy promotes learner autonomy, raises competence level and makes students' pronunciation intelligible and comprehensible.

Key words: Pronunciation, English as a Second Language, Text to Speech Software, Computer Assisted Pronunciation Teaching

Introduction

There are numerous languages around the world but only

English language has achieved the status of global language. Pronunciation learning is essential for a second language learner owing to its surmount global communicative demand to achieve the rationale of communication. English is taught as a second language only in formal settings in Pakistan. Students have no good background of English pronunciation as majority of students gets education in Urdu or English medium schools and colleges. Owing to grammar translation method, most of the students have very poor pronunciation. A growing demand of this fact has contributed to the expedition of innovative pronunciation teaching methodologies. In Pakistan, the use of software in language teaching classrooms is rarely found. It's one of the hardest rationales of a language teacher to make student an efficient speaker with an accurate pronunciation style. Keeping in view the changing and updated needs of the world-teaching techniques, it has become necessary to change the outdated teaching methodologies in Pakistan. Researchers have proved that language instructors have very little idea of the usage of pronunciation software for language teaching and learning. This study will serve as a foundation for English Language Teachers and suggest them how to apply Text to Speech software in their classroom for improving the pronunciation of English language learners.

It was hypothesized for this study that the induction of Text to Speech Software in pronunciation teaching classroom makes the students' pronunciation comprehensible, gives them ample opportunities to practise different sounds by providing them language learning autonomy. As a result, it helps them to make their accent clear, their tone correct and, on the whole, makes them effective communicator.

Computer Assisted Pronunciation Teaching (CAPT) is used for the integration of computer software through which sound, rhythm, intonation, stress and articulation of different phonemes, words, clauses, phrases and sentences is coached. Text to Speech Software is automatic technology-based speech

production computer software that can read any text aloud whether it's on the spot written by the user or exposed to computer through Optical Character Recognition (OCR). It's a tool that facilitates instructors for language teaching.

2. Importance of Pronunciation and Theoretical Approaches to Pronunciation Teaching

Pronunciation teaching is a mainstay in English Language teaching. Global English has provoked a number of linguists to shift their focus from grammar teaching to pronunciation teaching. According to a rough estimate, more than 1.6 billion people speak English as an international language. It is opined that a person's personality can be analyzed by his speaking style. Fraser (2000, 7) further supports this view by saying that,

Being able to speak English of course includes a number of sub skills, involving vocabulary, grammar, pragmatics, etc. However by far the most important of these skills is pronunciation - with good pronunciation, a speaker is intelligible despite other errors; with poor pronunciation, a speaker can be very difficult to understand, despite in other areas.

Pronunciation has an eminent historical background in second language and foreign language teaching. Seidlhofer (2001) says that, "Pronunciation teaching stood at the very beginning of language teaching methodology as a principled, theoretically-founded discipline, originating with the late-nineteenth-century Reform Movement" (p.56). Language is not only knowledge of semantics and semiotics rather it is a pathway to attain communicative expertise. This thought had given emergence to Communicative Approach to Pronunciation, as Demirezen (2011) asserts, "the students grasp how to use target language to communicate appropriately, fluently and effectively by being more concerned with students' initiative

and interaction rather than simply with teacher-centered direction" (p.57).

2.1. Students' and Teachers Attitudes towards Pronunciation Learning and Teaching through Computers

According to the studies in Asian context, it has been observed that students are timid and they feel nervous to speak with a fear of committing more mistakes. It is suggested in this approach that instructor should be competent enough to boost the morale of the students. For this purpose, instructor must have knowledge about different activities like information-gap, brainstorming, elicitation, riddles, puzzles, anecdotes etc. Through these activities, instructor can gain the attention of the learner. As Patil (2008) has well strengthened the view by saying that,

> Learners enjoy toying with the language, experimenting with it and gradually but surely feel confident and comfortable with the language. Once they have got rid of fear complex, they try to use English creatively. Since they are not scared of making mistakes, they try to use as much language as they can and in due course of time pick up more vocabulary and structures (239).

Isman et al. (2004) conducted a research and its findings proved that students believe that computer software usage is a necessity for their learning. They strengthened that software's multi-features can help them to solve their encountered problems in study. Tuzcuoglu (2000) investigated teachers' attitudes towards CALL in the Foreign Languages Department (FLD) at a university in Turkey and concluded that despite the availability of a computer lab and a request from the administration that teacher should use the lab for teaching; most of the teachers do not use computers for their teaching purpose. However, teachers had positive attitudes towards using CALL in language instruction and were ready to teach

with computers. Teachers agreed that using computer-based teaching would increase students' interest and language learning abilities. Fisher (2000) found that teachers' attitudes were strongly related to their success in using technology. Chen (1997) conducted a study on writing skills' improvement of Taiwanese students with the help of Computer-Assisted Language Learning.

Blankenship (1998) said that CAPT is the most effective technology introduced by men ever as it has brought about radical changes in English Language Teaching. Chun (1998) has suggested that although software is continuously improving, the use of this software is dire need to be in tune with the evolving teaching demands.

2.2. Current Situation of CALL in Pakistan

Government of Pakistan felt a dire need to bring about a drastic change in education sector. In turn, Higher Education Commission (HEC) of Pakistan has launched dynamic projects in English Language Teaching Reforms (ELTR) to bring innovative changes in English Language Teaching and for training and developing the capabilities of teachers in technical skills and general communicative competencies in order to give them firsthand knowledge in the latest teaching techniques.

Pronunciation which was once a bulwark, now, has been relegated to facultative status in Pakistan. ELTR workshops focused on the idea to replace prescribed teaching methodologies with the latest technology-equipped laboratories for language teaching. HEC should conduct more and more teacher training courses and the number of instructors to be trained, should be increased so that latest technology for pronunciation teaching should pedagogically implicate.

3. Research Methodology

It's a combination of both qualitative and quantitative

approaches. Qualitative provides an insight in opening right avenues for analysis and would also help to investigate the effectiveness of TTS. It is a pre-test-post-test, Control and experimental group design (Cohen et al. 2007, 274). This is an experimental study. Quantitative data was collected both from (pre-test and post-test) of both groups (controlled and experimental). Furthermore, daily attendance of the students was quantitatively measured to scrutinize which group of students showed more inclination towards TTS-based pronunciation learning. Qualitative data was collected from questionnaire of experimental group students. Descriptive statistical analyses (means and standard deviation) were used for the pre and post- tests of students' English pronunciation. Comparative statistical methods (independent sample t-test, paired-sample t-test) were used for the analysis of variance to make a comparison between the control and the experimental groups.

This study was the investigation of the effectiveness of Text To Speech Software for improving pronunciation of the Graduation level. Study sample was taken from The University of Lahore and Minhaj University. Only male students of Graduation class were taught through TTS for twenty-one days. Hundred students of graduation were selected and out of these hundred students fifty were selected from The University of Lahore and fifty from Minhaj University Lahore. All these hundred students took pre-test

This pre-test was taken through English pronunciation testing software. Only those forty male students from Minhaj University and The University of Lahore were selected for study whose pronunciation score, as compared to RP, was ranging from 20-40% in their pre-test. Further, these forty students were divided into two groups: Experimental group and Control group for the respective study. The two groups were as follows:

Serial No	Name of Group	Number of Students
1	Experimental Group	20
2	Controlled Group	20

Both groups were taught by the researcher for twenty one days. The control group was taught by conventional teaching methodology and was given the same time as was given to the experimental group. Study content was same for both the groups. The only difference was that the students in experimental group were taught through Text To Speech Software. The researcher provided study material in E-book form to the students. The selected data was converted from text into speech form for the students to listen and practise actual pronunciation patterns.

Further, during the period, attendance record of both groups was aptly preserved. The Quantitative analysis showed that experimental group students had shown positive attitude towards the usage of Text to Speech Software in pronunciation pedagogy, and they wanted to continue it in future.

4. Description of Teaching and pronunciation software

4.1 Tool of teaching:
4.1.1. A Brief description of Text to Speech Software

TTS, speech synthesis software performs the following functions: It copies the text and documented material into a technology-based program which then converts that written text into spoken text. User can select different male & female voices for listening purposes. They can even select different English options i.e. British English, American English etc to check out the difference between them. Moreover, user can control the speed of the text spoken by clicking on the icon; even

they can pause, stop, and repeat the spoken form of the text anytime. It also by default highlights the current running spoken text by changing the color of the text while functioning
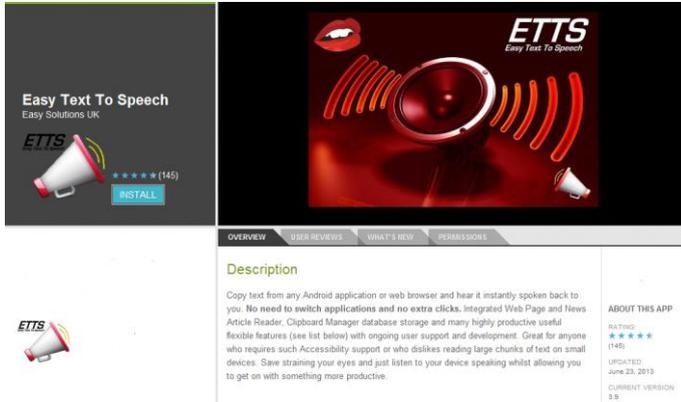

Figure 1: Easy *Text to speech software title screen*

4.2 Tool of testing:
4.2.1. English Pronunciation Testing
3-basic functions of English pronunciation testing software:

1. It helps the participants to hear the given sentence as much times as they want.
2. Participants can repeat the given sentence in their own voice; this software provides them instant feedback.
3. It analyses the participant pronunciation ability by giving them scores in percentage.
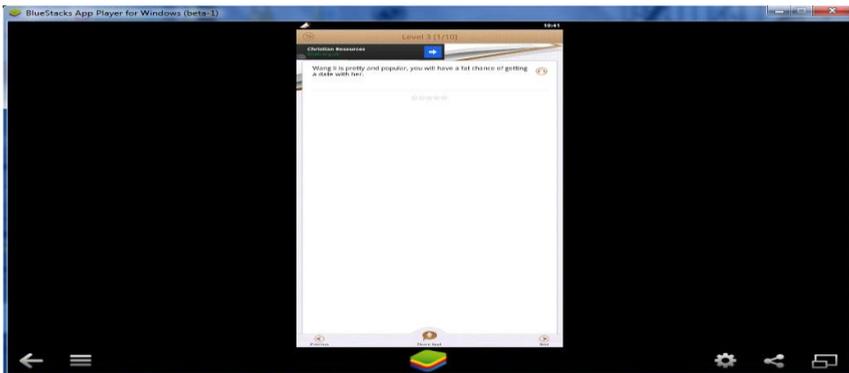

Figure 2 : English Pronunciation testing *opening window*

This software has been used in the study for pre-test and on the basis of the pronunciation score students have bisected into two groups controlled & experimental groups then it has been used in post-test to investigate the effectiveness of text to speech software for improving pronunciation of the students at graduation level.

5. Data Analysis

5.1. Is TTS efficient in improving pronunciation of the students?

The research question is answered by testing hypothesis "there would be a statistically significant difference in the pronunciation scores of control and experimental groups". The pronunciation scores of the pre-test revealed that Mean and Standard Deviation of Experimental group was 27.50(7.164). For Control group, Mean and Standard Deviation values in pre-test were 27.50(7.164). It is vivid from the obtained results that pronunciation scores of both groups had almost equal variance. The obtained data details are mentioned in the table 1.

Variable	Group	No. of Students	Mean	Std. Deviation
Pronunciation scores	Control	20	27.50	7.164
	Experimental	20	27.50	7.164

Table 1: Mean score and standard deviation of pronunciation scores in pre-test

Hypothesis one is tested by conducting independent samples t-test t = (.000), p= (1.000) alpha (0.05) has been generated from the results of the independent samples t-test.

It is obvious from the gained results that experimental and control groups in their pre-test had almost equal variance. Further, it is proved that no significant difference is observed in experimental and control groups. Experimental group was given treatment through TTS for twenty one days by the

researcher herself, while Control group was being taught for twenty one days through conventional teaching methodology. After completion of twenty one days, a post-test was conducted. Post-test scores revealed that there was an improvement in the pronunciation scores of both experimental and control groups.

For experimental group, Mean and Standard Deviation in the post-test scores were 39.00(12.524) while Mean and Standard Deviation in the post-test scores of the control group were 32.75(6.781). See (table 2).

Variable	Group	No. of Students	Mean	Std. Deviation
Pronunciation Scores	Control	20	32.75	6.781
	Experimental	20	39.00	12.524

Table 2: Mean score and standard deviation of pronunciation score in post-test

The difference in pre-test and post-test scores of experimental group is (27.50 - 39.00= 11.5, however the difference in pre-test and post-test scores of control group is (27.50 – 32.75 = 5.25. The values of difference of both groups is shown in the table 3 given below.

Variable	Pre-test		Post-test		Change	
Groups	Control	Experimental	Control	Experimental	Control	Experimental
Pronunciation scores	27.50	27.50	32.75	39.00	5.25	11.5

Table 3: Mean change in post-test pronunciation scores of both groups

Hypothesis is tested through Independent samples t-test, to sort out the statistically significant improvement in the pronunciation scores of experimental and control groups. The values of Independent samples t-test was t(38) -1.963, p=(0.59) alpha= 0.05 (see Appendix A).

It is clear from the mentioned results that there is no significant difference in the pre-test pronunciation scores of both experimental and control groups. After twenty one days'

coaching session, researcher conducted a post-test and found an increase in pronunciation scores of both groups. To see the improvements in pronunciation of the students a paired samples t-test was conducted. It proved that there was no significant difference in the pronunciation scores of control group as $t(19) = -2.304$, $p = .033$, $\alpha = 0.05$ (See Appendix B). However, there was a statistically significant difference in the pronunciation scores of experimental group as $t(19) = -4.524$, $p = 0.00$, $\alpha = 0.05$ (See Appendix C).

5.2. Analysis of the Students' attitudes towards learning English pronunciation by Text to Speech Software

To analyze the opinions, likings, disliking of the students and to acquire the feedback of the students regarding the usage of TTS, a questionnaire was administered for both experimental group and control group. Furthermore, it was designed to enquire about the experiences and recommendations of the students. The questionnaire comprised of five multiple choice questions. Students had to select the option which suits them most. All the questions were analysed on three points (Yes, No, Not sure).

Question	Yes	No	Not Sure
Q.1. Do you feel an enhancement in the interest of learning pronunciation through TTS?	85%	5%	10%
Q.2. Do you think that TTS can enhance your pronunciation scores?	85%	-------	15%
Q.3. Do you think, by using TTS, you can come up with better ways of learning pronunciation?	100%	------	------
Q.4. Do you think that TTS is an effective methodology for learning pronunciation in Pakistan?	100%	------	------
Q.5. Do you think that TTS has developed your inclination towards the usage of technology for ELL learning?	100%	------	------

Discussion

Answering to the first question, 85% of the students said that TTS has helped them a lot in improving their pronunciation level, as it provide them facility to hear content whenever they want and they can use this flexible tool wherever they desire. This has also provided them ample opportunities to practise on their own. They are now not restricted to just study the transcription from the printed material, now they can hear the actual pronunciation of various words by TTS. On the other hand, 5% of the students were not certifying TTS. They might have negatively responded to reveal that they don't like active innovations in teaching methodologies. While 10% students who are not sure about the role of TTS in pronunciation improvement can be analysed in such a way that they have not felt out any difference in their pronunciation capability in

comparison to prior or might be they don't want to acknowledge TTS worth alone.

In case of second question, 85% of the students agreed that there is remarkable increase in their pronunciation comprehensibility by the usage of TTS. This was observed not only through their classroom performance but can also be analysed through the increase in pronunciation scores of these experimental group students. However, those 15% students who have not found any clear difference in their pre-test and post-test pronunciation scores were not certain about TTS. It's impossible for them to show positive attitude towards TTS integration in teaching pronunciation. Moreover it can also be said that negligence of these students could also be the reason of their poor pronunciation scores.

For question number third, 100% of the students supported the view that by using TTS, they had enjoyed a better way of learning pronunciation. Variety of options in TTS had helped them to use it for their specific purposes. As it contains different languages option, native male and female voices, option to control the pitch and speed of sounds, which they could use on their own as compared to the traditional classrooms where they ought to learn transcriptions and where they feel shy to say their teacher, repeat that sound again. Finally they accepted TTS as a good change.

Fourth question investigates from the students about the effectiveness of TTS methodology for learning pronunciation in Pakistan. 100% respondents are of the view that its innovative and excellent integration into teaching methodologies. They truly desired TTS to be exercised in future. 100% of the students endorsed in favor of the fifth statement that TTS had developed their inclination towards the usage of technology for English Language Learning. They were of the view that previously they have certain confidence and reservation issues in the usage of technology for their learning purpose but now TTS has developed their interest in

exploration through internet and web based programmes for ELL learning. Now they feel more comfortable in using digital items and believe that they could get more benefit from it.

6. Conclusion:

The present research got successful in investigating the effectiveness of Text to speech software for Improving Pronunciation of the students at Graduation Level in Pakistan. This methodology is a blessing for both teachers and students. The promotion of this methodology will result in better aptitude, competence level and pronunciation power of the students. This has not only encouraged them in their pre-requisite knowledge of computer software but also further trained them in using computer software for their learning purpose. It had solved many practical problems which orthodox teaching methodologies failed to solve. This methodology also got successful in enhancing the pronunciation level of the students. Before the commencement of the study, students had equal pronunciation level as was clear from the pre-test results. But after the coaching of twenty one days, statistically significant difference in the pronunciation scores of the students of both groups was found. This was the major cause of the popularity and effectiveness of text to speech software among students. There is a paucity of research regarding TTS usage in Pakistan. The present research aid new avenues for future researchers to delve into this field.

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Appendix A: Independent Samples t-test of both groups

Test	Assume	Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
pretest	Equal variances assumed	.000	1.000	.000	38	1.000	.000	2.265	-4.586	4.586
	Equal variances not assumed			.000	38.00	1.000	.000	2.265	-4.586	4.586
Post-test	Equal variances assumed	6.528	.015	-1.963	38	.057	-6.250	3.185	-12.697	.197
	Equal variances not assumed			-1.963	29.260	.059	-6.250	3.185	-12.761	.261

Appendix B: Paired Samples t-test of Control group

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Control group pre-test - Control group post-test	-5.250000	10.192231	2.279052	-10.020111	-.479889	-2.304	19	.033

Appendix C: Paired samples t-test for Experimental group

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 2	Experimental group pre-test - Experimental group post-test	-11.500000	11.367081	2.541757	-16.819958	-6.180042	-4.524	19	.000

Appendix D: Experimental Group Students'

Questionnaire

Name of the student ------------------

Please check the most suitable option.

1. Do you feel an enhancement in the interest of learning pronunciation through TTS?

(a) Yes (b) no (c) not sure

2. Do you think that TTS can enhance your pronunciation scores?

(a) Yes (b) no (c) not sure

3. Do you think, by using TTS, you can come up with better ways of learning pronunciation?

(a) Yes (b) no (c) not sure

4. Do you think that TTS is an effective methodology for learning pronunciation in Pakistan?

(a) Yes (b) no (c) not sure

5. Do you think that TTS has developed your inclination towards the usage of technology for ELL learning?

(a) Yes (b) no (c) not sure