

IMPACT OF ONLINE ENGLISH LANGUAGE INSTRUCTION ON THE FLUENCY OF ENGINEERING STUDENTS

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ABSTRACT

Online teaching- learning has grown steadily in the past few years with the increase in internet connectivity and providing students with a cost effective and convenient mode of learning. Online education has become a reality in the wake of this pandemic. With education becoming completely online, it is critical to test the effectiveness of the English language learning of students. Even though online language learning has been available for a long time, not much research has been done on the effectiveness of the process. Research on the curriculum design and development of the language skills with focus on –listening, speaking, reading and writing have been done to some extent but less empirical research is done to study and analyse the development of fluency of engineering students through online course in English language. The present study will focus on the effectiveness of online English language course in developing the fluency of engineering graduates by analysing the samples produced by the learners at the end of the course. Data collected through questionnaires will also be analysed and documented.

Keywords: *engineering students, English language, fluency development*

Introduction Engineering Education and ELT in India

Indian engineers have played a major role in contributing to the world's economic and technological development. The contribution of engineers to various fields has been significant not only in India but across the globe. India has emerged as a major contributor of engineering knowledge base especially in Information technology, electronics, and mechanical and communication sectors. In the 21st century, expectations of the global market have laid tremendous pressure on the Indian engineering education. While countries like the US and UK superpowers in the field of Science and Technology, developing countries like India and a few Asian countries are working to create the required knowledge base and skilled man power to fall in line. New challenges and demands have to be met and curricula have to be designed to suit this need. The status of engineering education in India needs to be reviewed and revised from time to time in the light of the emerging expectations of the globalized world. While research has shown the science, technology engineering and maths (STEM) statistics and data analysis skills are of top priority and most preferred skills in the global workforce of today, proficiency in English language emerged as a universal pre-requisite for jobs across the world. Indian engineers were found to be good at technical skills but poor at communication skills. The relevance

and prominence of incorporating English language teaching (ELT) in the curricula of engineering education was clearly envisaged. It is felt that good communication skills coupled with excellent technical knowledge creates global opportunities for today's engineer. The teaching of the four language skills (listening speaking reading and writing) was also one of the main focus of engineering studies in India.

Literature Review on Online Education ONLINE EDUCATION

Online education was made available to those students who may not be able to attend the regular college due to many reasons. This kind of learning away from the traditional classroom instruction is nothing new to everyone, correspondence course and distance education existed from decades. Today with the advent of the internet and the World Wide Web, teaching learning has reached students from all over the globe. New technologies associated with the internet have improved online teaching and learning making it more creative and interesting. Students who are from economically low have greatly benefitted from such a venture. (Moore & Kearsly, 2005)

Recently a major shift in the educational system is seen due to the pandemic. Education has totally become online and suddenly internet and technology came to the rescue of everyone alike. E-learners and online consumers have increased tremendously. Online education for every student became the new normal during this crisis. Online education isn't a new thing, over the past few decades it has increased because of improved internet connectivity and improved bandwidth thus providing students with cost effective and convenient mode of learning (Allen & Seaman, 2008). The number of students participating in online education has also increased over the years. Among the various courses available online there are numerous courses which cater to the English language needs of students who wish to study at their convenience away from the traditional mode of learning in colleges.

The pandemic of December 2019 has made main stream education totally online. All efforts were directed in making the classes more effective and learner friendly but periodic checks to test the effectiveness of these online courses was not done adequately. While there were many courses offered online, English language and communication course was also offered online to engineering students for the entire semester of four months duration. Thus teaching a performance based skill

online requires conscious effort to incorporate meaningful practice using the target language (Ortega,2009).

The Present Course for Engineering First Year Students

Several institutions in the state of Telangana offer a course in English language as part of the curriculum for engineering studies. English language and communication course is offered is a two credit based course and has been taught completely online due to the pandemic. Students were taught through various technological tools, through power point presentations and videos. Study material and worksheets were also given to students as additional inputs. Online classes were carried out on Microsoft teams platform which supported a lot of new features such as video and audio mode of teaching and learning, setting up of quiz and assignments etc. Research has been done on curriculum design and development of the four language skills (listening, speaking, reading and writing) to some extent but there is less empirical research done to study and analyse the fluency development of engineering students through online course in English language and communication. Even though online education was there for quite some time not much research has been done to test the effectiveness of the process involved.

Developing Oral Proficiency

One of the outcomes of English language and communication course for the first year engineering students is to develop their oral proficiency. The students should be able to speak fluently and accurately. The online course has given a lot of practice through activities like group discussion, debates, public speaking, presentations etc. The interactions in the class provide ample opportunities for the use of language and development of fluency. In language learning, growth is measured by the students' proficiency and proficiency in turn is measured by the ability to speak fluently and accurately (Brumfit, 1984).

Fluency and its Characteristics

Webster's Dictionary defines fluency as the ability to speak easily and smoothly. Fluency is one of the ways to measure an individuals' language ability. According to Stark Weather, 1987 the term fluency means non-stuttered and forward moving speech in regard to both content and production. Another way of defining fluency is the ability to produce long continuous utterances at a rapid rate. Although there are no specific definitions for fluency, it can be said that a person is said to be fluent if the language used is fluid, natural and coherent as against slow and halting (Chambers, Francine, 1997). Another characteristic of fluency is automaticity of the language user (Schmidt, R, 1992). The theory of automaticity states that the language user manages to take into account all the components of fluency while speaking without paying individual attention to each of them. Researchers who focus on speed or length and rate of speech usually expect fluent language users to speak automatically without unusual pauses and repetitions. Sometimes fluency can also be the measure of one's performance and not a concrete knowledge of the language alone. This means that the perception and understand ability are also key indicators of fluency. As there is no specific definition for fluency it can therefore be said that fluency is the ability to speak within the norms of native speech. Experts in fluency research say that the norms of native speech lie in the linguistic features such as rate of speech, pauses, utterance length and the linking of thoughts groups (Bohlke. 2014).

Speech rate : is the amount of effective speech that is produced in a given time. i.e number of syllables per minute. (Riggenbach,1991; Thompson,2015)

Utterance length or articulation rate: is number of syllables that can be produced in one minute between disfluencies e.g pause or hesitation. (Riggenbach,1991; Thompson,2015)

Number of silent pauses: is calculated by the number of pauses produced in a speaking sample of minimum length that is decided by the researcher.

Silent pause ratio: is described as the percentage of time in a speaking sample that the

participants' speech is paused. It takes into account the amount of time the student had to complete the task and thus it is a better measure of fluency than the number of silent pauses.

Intensity: is the stress that falls on the syllables of the words.

Pitch: is the rise and fall of the students' voice while speaking. It gives suitable meaning to sentences. It is directly related to word and syllable stress.

To investigate how the English Language and Communication course has influenced students' fluency development in learning the English language, the present study will analyse the linguistic output of students who participated in this research.

The audio samples taken for research are students who took online English language and communication classes which focused on developing students listening and speaking skill. Students who take the course are from various districts in the state of Telangana. It is a course offered for the entire semester of four months duration. While this course has been offered for many years now, little is known about students fluency development after taking this course.

Students' Perception and Attitudes

To know about the students' attitude towards the course and to find out how they feel about what was being taught to them and the impact of the course on their language, a feedback was taken in the form of a questionnaire. The students' attitude and perception of the course can correlate with the knowledge or skill development. Thus knowing how the student feels about the course is important.

RESEARCH QUESTIONS

The following two research questions were investigated:

1. What fluency gains did the students of B.E first year achieve when they enrolled for the English language and communication course spread over 4 months or 14 weeks as measured by the five fluency feature: speech rate, articulation rate, number of silent pauses, silent pause ratio and intensity.
2. What attitudes and perceptions did the students have about the course which may have influenced their fluency development.

DELIMITATIONS

There were a number of constraints present in this survey. The audio samples were collected from engineering first year students after completion of the course. The online course was spread over 4 months of a semester. The researcher had no control over the syllabus, the content of the course, the assignments that were given to the students. The intent of the

study was to be a controlled one but the institution controlled the course and its nature of the assignments and speaking tasks and the duration of the course. The audio samples were collected only at the end of the online course and compared to the native English speakers. The intent was to gather the sample during the first week of the course. The English language and communication course is offered every semester and is taught by experienced faculty. The audio tapes received was in the OPUS format and had to be converted into MP3 and WAV files in order for the analysis to be done by Praat software designed to gather fluency features such as rate of speed, number of silent pauses, articulation rate, silent pause ratio, pitch and intensity. The researcher had no control on the quality of the recordings.

RESEARCH DESIGN

The purpose of this study was to analyse the fluency of first year engineering students after a 14 week long online course in English language and communication. The audio data was collected at the end of the course and compared to native speakers of the English language. A qualitative analysis was also carried out in addition to the audio data taken. The qualitative data was collected through google forms to find out from the participants about their fluency development at the end of the course.

PARTICIPANTS

Participants in this study were first year engineering students enrolled for B.E programme in the state of Telangana. Participants were from a heterogeneous backgrounds and thus many of the students taking admission into engineering colleges are non native speakers of English and need additional English language instruction to be successful in the course. The mission of the institution is to serve the student community and provide opportunities for good employment. The English language and communication course is designed on the basis of the four language skills namely listening, speaking, reading and writing. The participants in this study were given ample training and practice in listening and speaking skills through language laboratory activities through online mode. Experienced faculty were constantly instructing and training the participants throughout the 14 weeks online course beginning from April 2021 to July 2021. A total number of students enrolled for the course were around 55. The age of the participants was around 17 years. Most of them are from nearby districts of Hyderabad and were from various educational backgrounds. In the 16 samples collected two participants were from telugu medium background in school.

The Course Design

During the 14 week course students were given online practice in English language through listening and speaking activities such as group discussions, debates, role plays and speeches. The teacher would post videos and material on topics every week and encourage a discussion after watching it. Assignments were conducted online to keep the student in line with the topics that were being taught every week. The teacher would provide assistance to the students while speaking and participating in online activities. The students were given 10mins of the 50mins online class to interact with teacher and express views. Teamwork was given importance during the class and students were allowed to express their opinions and participated in discussions that followed.

PROCEDURE

Data was collected at the end of the semester in July 2021. The same teacher taught the 14 weeks online course. Students were given a task of speaking on a given topic for a minute. A total of 16 samples were collected as audio files. For the sake of anonymity the students' details were not disclosed. A survey Google form was administered at the end of the course to assess the students' impressions of the online course and the development of their oral proficiency in the language. Also to gather information about the course so as to improve it further. A linguistic analysis coupled with survey data would be ideal to study the fluency development as against the native speakers and what factors are responsible the development.

ANALYSIS

The audio samples of 16 participants were taken for analysis. The OPUS audio data files were converted into MP3 and WAV files so that Praat software could analyse the fluency features of the audio data (Boersma & Paul, 2016). Praat software is used for acoustical analysis of a speech which is used by many studies. Using Praat many fluency features were analysed such as number of silent pauses, silent pause ratio rate of speed, articulation rate, pitch, and intensity. The software allowed analysing multiple features of the data in one time, however a few mathematical analyses was also needed to get the mean ratio.

Number of silent pauses: this was taken by counting the number of pauses that were over 0.3 seconds in the length of the speech, as established by previous research.

Silent pause ratio: this is determined by the percentage of time during a speech sample that the participant stopped as against the total response time.

Rate of speed: this is taken by the total number of syllables in the speech sample divided by the total time taken to speak. (including the pauses)

Articulation rate: this was determined by taking the total number of syllables produced in the sample and then dividing it by the total speaking time.

Pitch: The pitch of the voice is one of the main characteristics, but in the field of acoustic technologies the correct name of this parameter is the fundamental frequency. This is determined by the troughs and crest in frequency graph.

Intensity: this is the stress given to the syllables in the speech samples and is automatically determined by the software when the speech sample is extracted. A graph is given to show the intensity of the voice.

The audio data was run through Praat software and an extract of the sample was taken to study the features. The audio data was heard and a selection of the extract was taken to examine the features. Pauses were indicated by white bars and gaps in the graph and accordingly calculated as mentioned above. The pitch graph and values were determined by extracting a portion of the sample after listening to it several times. The values of minimum and maximum pitch were got in hz. A graph was also given to determine the variations in pitch. Praat software also analyses the intensity of the audio data. This was determined by extracting a part of the sample and is indicated by the stress on syllables of the words in the sample through a graph. The minimum and maximum values standard deviation is given by the software.

Data was obtained through student survey where questions were asked regarding the online course and their perception of it. The survey was conducted to know the impressions of the students regarding the language development activities that can enhance the oral proficiency of the students. charts and graphs were generated to determine the students ideas.

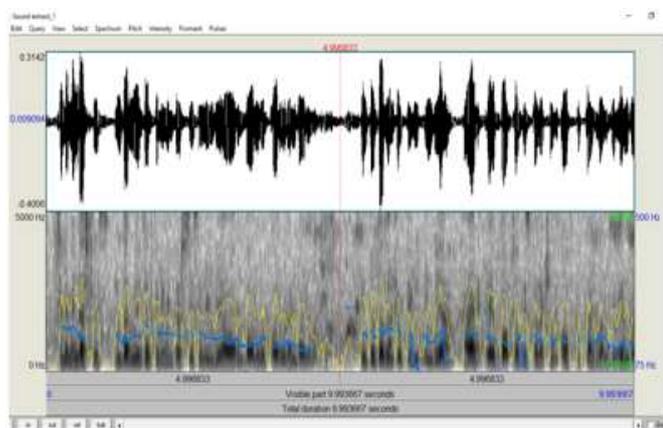
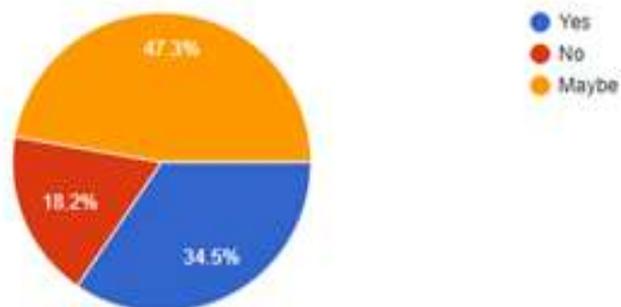
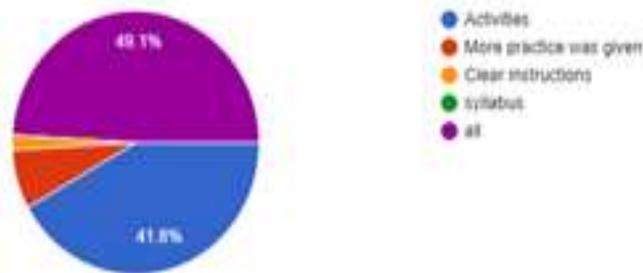
RESULTS

The results of the data and survey are given below

Quantitative Results

Table 1. shows the number (N) the mean score (M) and the standard deviation (D), For all the features of fluency, Descriptive statistics for the features of fluency

Fluency features	End of 14 week		
	N	M	D
1.Number of silent pauses	20	3.3	12.3
2.Silent pause ratio	23	1.96	.45
3.Rate of speed	23	1.96	.76
4.Articulation rate	22	2.7	.45
5. Pitch	16	213.3	45.167
6. Intensity	16	56.75	10.58



QUALITATIVE RESULTS

Table 2

Table 2 represents data from the survey conducted by administering the Google form and the results show that students have improved their fluency after attending the English language communication course. In the survey students felt that the activities, practice and teaching are the features that helped them to improve their fluency in the English language.

Descriptive statistics of the number of hours student spend (hours)

	M	D
1. Activities	5.4	3.13
2. Practice	4.2	3.68
3. Teaching	4.1	3.17

DISCUSSION

The purpose of the study is to determine if the oral fluency of the first year engineering students have developed after the 14 week online course in English language and communication. The quantitative data showed that there was a significant change in the fluency of the students while the qualitative data showed that the students perception of the course was good and successful in improving their fluency in the language. The course syllabus can be further modified to suit the needs of the students as it is seen that the number of pauses in the data are more and this indicates inconsistencies in speak. This can be further attributed to the social backgrounds of the engineering students who enrol for the B.E programme in the state of Telangana.

CONCLUSION

The qualitative and quantitative results only show that the student have benefitted by attending the online classes however it is important to give practice in speaking the language more fluently as seen in the number of pauses and the silent pause ratio from the data collected. In the survey students feel that they have considerably improved in fluency but not as expected. This can be attributed to the syllabus design. The finding show that additional tasks and activities must be implemented if a real change in their speaking is to be brought about. The study shows results befitting the field of online English language instruction for engineering students.

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