

Effectiveness of Online Teaching in Language and Communication Classes in Engineering

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Abstract—Language and communication classes are more effective with the use of direct methods that are also known as natural methods. With use of active learning techniques a language teacher can bring the learners at the centre of the teaching learning process. This study reviews second language teaching approaches and active learning methods. We identified active learning techniques useful in language and communication class. Blended use of selected active learning techniques with computerized teaching learning tools may help in making these classes effective towards fulfillment of specific topic outcomes. Engaging language and communication class in online mode has some hurdles as well as limitations. The present study is an attempt to identify these problems of content delivery in online language and communication classes. The study recommends modified active learning methods for effective online language and communication lectures. Further, we suggest possible academic and professional implications of active learning techniques in online mode.

Keywords—Active learning; ICT; Second language teaching approaches.

I. INTRODUCTION

Teachers always have freedom to be flexible in selecting teaching methods and choosing resources adequate in teaching learning process of a specific course. Teachers always have flexibility in molding and blending existing teaching methods to meet classroom requirements. That is helpful in making language teaching and learning simple and natural.

The languages were studied earlier for interpretation and translation of classical literature. In colonized countries like India English was taught as a second language to serve various administrative purposes of the rulers. Nowadays, teaching learning of first language i.e. mother tongue (L1) or second/foreign language (L2) is done to address academic and professional requirements from a language. People increasingly prefer learning L2 to serve their professional needs. Bose (1989) quoted Jack Richards and Theodore Rodgers who made concluding remarks that “both from a contemporary and historical perspective, bilingualism or multilingualism is the norm rather than the exception” (P. 96).

Professional education institutions introduced second/foreign

language courses in the curriculum or certificate training programs to their students so that more number of multinational avenues will be open for these students.

Use of direct methods that are also known as natural methods in second language and communication classes is most preferred for effectiveness and to achieve learning outcomes. In this method exclusive verbal one on one dialogue using target language is expected. Additionally, creative use of active learning techniques by a language teacher in these classes makes it more participatory for students and helps to boost the learning process. Blended use of selected active learning techniques with computerized teaching learning tools may help to increase level of student engagement in language and communication classes that ultimately resulting in improved attainment of course outcomes. These outcomes are the measurable statements on result of student's learning. Teaching of language and communication in online mode has a lot of hurdles as well as limitations. A language teacher at present is expected to have understanding of functionalities of technology and basic technological skills in addition to appropriate pedagogical skills.

The present study implements selected active learning techniques in online language and communication lectures. This helps to identify problems in online delivery of second language and communication skills content. In order to overcome these problems, feasible technological solutions are identified and applied. This provides a foundation to recommend modified active learning methods for effective online language and communication lectures.

II. ICT IN INDIAN EDUCATION SYSTEM

Most of the language and communication teachers in general prefer to follow set methods of classroom delivery to meet the teaching learning objectives and course outcomes. Indian Institutes of Technology (IITs) and Indian Institute of Science (IIS), Bangalore collaboratively started the National Programme on Technology Enhanced Learning (NPTEL) in 2003. This is the first formal platform of its type in India that provides online certification courses. It sets standards for Information and Communication Technology (ICT) based education in general and online certificate courses in particular

in India. Education setup and especially teachers in India were not much exposed to online teaching-learning practices before March 2019 i.e. temporary closure of educational institutions due to COVID19 pandemic situation occurred in India. With extension of lockdown, educational institutions in India gradually started practicing online educational tools and platforms to compensate for the educational loss of the students. It is a new experience and an experiment for the teachers and students because almost all of them are untrained for this.

COVID19 pandemic situation compelled to switch from traditional educational systems to online mode of teaching learning. The changed scenario makes it challenging to the language and communication teachers to fit their content delivery methods in online mode or to blend it with online tools. For a teacher of language and communication skills in engineering and technological institutions, this shift was comparatively smooth than the other educational institutes. This is because a language teacher's primary exposure to existing technological setup with these institutes, teacher and student's experience with language and communication skills laboratory, student's ease and understanding of multimedia platforms, and easily available technical assistance in these institutes.

III. METHODOLOGY

Active learning techniques are used in classroom delivery of a course content to achieve learning outcomes. These are highly useful in language and communication classes in engineering to attain course learning outcomes. The selected active learning techniques with suitable computerized teaching learning tools are collaboratively used. The experimentation is done with first year undergraduate (UG) engineering classes of English Proficiency and first year post graduate (PG) engineering classes of Technical Communication. These engineering courses deal with language and communication skills that are almost common in both. Though the UG course has basic level and the PG course has advance level of content, teaching methods selected are same. In the experimental group there is representation of UG and PG students to maintain diversity in sampling.

These techniques and tools are used for the study purpose in selected online lectures of undergraduate and postgraduate engineering classes only. Some of the individual and group activities get extended in more than one lecture to analyse student presentations. It is challenging to ensure hundred percent involvement of a student in online lectures. There are other possibilities like poor internet connectivity, lack of direct monitoring of student activities, student's inadequate skills in use of computerized teaching learning tools, lack of complete coordination among members in group activities and so on.

Absence of classroom learning environment, missed non-verbal clues in virtual interaction, and lack of emotional connect in working isolated with non-human digital devices like desktop, tablet and mobile handsets cannot be ignored in implementation of the online teaching learning styles. The student performances, assessment results and student feedback of online active learning classes are compared with that of passive classes.

IV. LANGUAGE TEACHING: APPROACHES AND METHODS

The set methods and approaches of a second language teaching commonly used in language and communication lectures in general are discussed in brief here.

The first such method is Grammar-Translation known as Traditional Method. The method emphasizes teaching grammar of L2 and practicing translation from and into the second language. It is expected in this method to recite the target language grammar rules and practice or apply them in text translation activities. In this method, the first language is used as a medium of instruction and vocabulary building is based on a bilingual word list. This is a preferred method by Indian teachers in L2 classes because most of the curriculum still incorporates grammar units in language and communication course contents.

The second approach is known as Oral-Situational Language Teaching Practices, wherein situational and contextual hints trigger a learner to find out language meanings. In this attention is paid to develop reading skill where vocabulary development becomes a prime component in improving reading competency. Harold E. Palmer, a linguist and A. S. Hornby, a grammarian, are the two British pioneering figures of English language teaching who have propounded this method. Memorization of routine language expressions is also emphasized in this method.

Establishment of the International Phonetic Association in 1886 commonly known as IPA has given a new perspective to language teaching. Pronunciation training to improve phonetic correctness, practice in conversational English, inductive method of grammar teaching and graded teaching resource materials become the features of the third method that is Linguistic Way of Language Teaching.

The fourth is Direct Method wherein dialogue between teacher and learner is preferred in target language to ensure language learning in a natural way. The exchange of question answers is used to trigger the conversation between teacher and learner. It makes acquisition of L2 direct like L1 learning. In this kind of interaction objects, pictures, demonstrations,

dictations and other similar types of tools and techniques are used for a learner's better understanding of communication in L2. The objective of this method is to remove the learner's L1 frame of reference in the learning of L2.

Michael West (1960) has observed during teaching English as a second language that it is easier for learners to read than to speak. Reading skill is used as a practical instructional tool in the fifth method of language teaching. In the Reading Method, comprehension activity objectives like building the learner's vocabulary, pronunciation practice, etc. can be achieved in a methodical way with selection of graded text.

In its learning, considering language as a meaningful system is called the Cognitive Approach of language learning. The approach expects that the target language is to be learnt in its different manifestations to achieve competency. This sixth approach of second language teaching-learning is further extension of direct method and grammar-translation method. The learner is supposed to understand the language structure, acquire rules of it, and use the language creatively. This grammatical, phonological and lexical analysis of the target language helps learners in using it with ease for everyday interactions.

Communicative Language Teaching Approach recognizes language as one of the tools for communication or interaction. David Wilkins (1983), a proponent of this approach, emphasizes developing communicative competence of language learners. This brings a major shift in language teaching-learning from structural understanding to exploration of language for expression.

V. ACTIVE LEARNING METHODS

Active teaching-learning methods stimulate cognitive processes among students more than traditional passive teaching-learning techniques. Use of active learning techniques gives students an experience of joyful learning and helps language teachers in achieving topic learning outcomes.

Ever-increasing competition in education and the professional world as well as students' growing expectations from the classroom leads philosophers of education to devise new pedagogical techniques. In an attempt to make students' classroom experience joyful and productive, educators keep trying and recommending innovative teaching methods and classroom activities. Norbert Michel (2009) called these several instructional models as active learning techniques that make students self learners. There are commonly known active learning methods. Experiential learning method is proposed by David Kolb (1984) wherein during instructions students are supplemented with course related experiences so that they can learn from it. David Johnson et al. (1991)

suggested cooperative learning technique where in small groups students explore the given concept in discussion among them or a group task is assigned to them so that sharing of knowledge will be possible by working together. Participative learning method is advocated by Annette Mills (1999) in which students are made accountable for success of the lecture by participating in deciding course content delivery method and in selecting assessment techniques. Problem-based learning technique is offered by Janice S. Miller (2004) where course instructions are associated with solving a real life problem. Here, students are motivated to self-study the concepts and principles of the course to apply in solving selected problems.

VI. ICT COMPETENCIES FOR A TEACHER

According to Ursula Stickler et al. (2020), it is unavoidable for a language teacher to acquire online teaching skills. Learning and teaching of languages and communication skills in ICT mode is considerably different from face-to-face traditional mode. Acquiring the required skills is possible with participant centric experiential training in technology handling and in pedagogical practices in online mode. Regine Hampel, et al (2005) listed required skills in a teacher for successful online teaching. These are basic ICT competencies, skills to operate specific software, online socialization, creativity in teaching, devising personal style, etc. This will help a teacher in replicating some of the features of the traditional classroom in online class.

A teacher can successfully blend his/her pedagogical skills with technology only when he/she has basic software and hardware skills. Zhiwen Hu and Ian McGrath (2011) have listed the required technical skills for a teacher and these are software installation, basics of internet and intranet, working with office suits, handling multimedia devices and software for recording and editing audio and video files, use of interactive digital boards, etc. In addition to this, skill to use some popular applications like Google Forms and Microsoft Quiz creatively for pedagogical purposes is needed for a teacher. A teacher can effectively use social media platforms to interact with students, to share with them resources and to assign tasks for performance evaluation.

Online teaching learning provides comfort and pace to both teacher and students. It adds effectiveness with use of e-resources. In a limited group student receives personal attention from teacher. Student responses/submissions online and its assessment is accessible any time. It is feasible to make available recording to students after an online session.

VII. DISCUSSION

It is discussed above in detail that active learning methods are student centric wherein students are made part of teacher assisted content delivery. Further, students are held responsible for their learning by instructing them to work together in groups on content based tasks and assignments. It changes the teacher's role as facilitator and not just the information sharer. There are many active learning techniques advocated by educators as they are free to do so. In a language and communication class all these methods cannot be effectively implemented. Especially, in technology assisted distance mode or in online teaching it becomes challenging for a language teacher. On the basis of suitability of the technique in language class and feasibility of it in online class, following most common active learning techniques are selected for the experimentation with language and communication skills students.

A. Think Pair Share: In the first stage of this technique students think individually on a given question or concept. In the later stage, they share their views and opinions on the topic with a neighboring student.

B. Role Playing: This technique is encouraging especially for inactive students in the class. In this activity a student has to put himself/herself in an imaginary role and has to study and present various facets and affecting factors of it.

C. Peer Review: Written assignments of classwork and homework are to be reviewed and commented on by classmates in this method. This helps students in better understanding of the topic.

D. Discussion: This is a useful method in promoting higher order thinking among students. A teacher has to frame such questions that will trigger discussion in the class. In such a discussion the selected topic gets automatically explored that helps all students in clear understanding of it.

E. Case-based learning: In this technique individual students or groups of students are provided with real world situations wherein they can apply their knowledge and skills in giving concluding remarks.

Online classes of experimental groups of undergraduate and postgraduate students are conducted on Microsoft Teams group chat software. This platform can be used on computers and laptops with desktop software and on mobile phone devices and tablets with applications that provide users a convenience to use as per the availability of devices with them. In addition to most common features like scheduling a

meeting; sharing the content; recording the session and group chat, this platform has facilities to conduct quizzes and assignments, to evaluate assignments and returning them with comments, to store and share recorded videos and documents, to edit text files, and to divide students into groups using teams and channels in it.

The experimentation is done in first year B. Tech classes and first year M. Tech classes in Rajarambapu Institute of Technology (RIT), Islampur, Maharashtra, India. There are seven undergraduate B. Tech programs having nine first year classes. Each class consists of around sixty five students. For the sake of pedagogical convenience, students of English Proficiency classes are divided into two batches. Each batch consists of around thirty students. Out of these eighteen batches the selected active learning techniques are implemented in eight batches i.e. around two hundred fifty students for identified online lecture sessions of English Proficiency. There are nine postgraduate programs. Most of these programs have eighteen intake capacities. Out of these nine classes the selected active learning techniques are implemented in four classes i.e. seventy two students for identified online lecture sessions of Technical Communication.

Selected language and communication skills topics from first year B. Tech English Proficiency course and first year M. Tech Technical Communication course are taught in online mode using identified active learning techniques. Following Table I gives the details of active learning technique implementation in select online sessions. This table states the strategy followed in executing the active learning technique. Also, the difficulties faced and readily available solutions or expert advice to overcome the identified problems are stated in the table.

TABLE I
OVERVIEW OF ACTIVE LEARNING TECHNIQUES
IMPLEMENTATION

Sr. No.	Active Learning Technique and Class, Course and Selected Topic	Active Learning Strategy	Difficulties Identified	Ways to Overcome Difficulties / Expert Advises
1.	Think Pair Share First year B. Tech - English Proficiency Nature and Process of Communication	Step 1: Concepts related to the topic are allocated separately to the students. The care is taken that 2 to 3 students will individually work on each of the concepts.	Sharing of thoughts and opinions live on the topic in isolated small groups in online mode is difficult to arrange.	Members of the group are permitted to chat on WhatsApp, interact on phone or launch new meetings on any convenient platform. Students are instructed to

		Then students are asked to think and research on it. <i>Concepts: Communication Process, Elements, Types of communication, Barriers to effective communication, Body Language, etc.</i> Step 2: Students having the same topics are grouped and are asked to discuss and share their information on topic with each other. Step 3: Entire group or a representative is asked to present the topic to the class.		share with teacher the links of selected interaction modes.		it. Step 3: Teacher has reallocated the abstracts to students for peer review. A care is taken that the student's own abstract will not be allocated to him/her for the review. Step 4: Review in oral or written form is invited from them. Students are expected to make specific comments to correct or improve the write up.		original submission. For this, font colour coding can be applied.	
2.	Role Playing First year B. Tech - English Proficiency Speaking Skills	Step 1: Small groups of students are formed with care that no group will have all students with poor language skills together. Step 2: Different topics for situational conversation are allocated to these groups. Step 3: Enough time to develop content/dialogue and to plan presentation is given to each group. Step 4: Dialogues are presented by groups and feedback from rest of the students is invited.	Dialogue among participant role players in online mode is difficult to conduct and inconvenient to check their body language clues.	1. Telephonic conversational situations can be used instead of dialogue in physical presence. 2. Groups can be given recorded dialogues for the analysis on specified parameters. 3. Group can perform dialogue on a video conference call.	4.	Discussion First year B. Tech - English Proficiency Report Writing	Step 1: Handout on report writing is provided well in advance to the students to study it. Step 2: Teacher has framed a set of relevant questions that are going to trigger discussion among students. These questions are placed on PPT slides as one question on each slide. Step 3: With a brief introduction to the topic, the teacher started floating questions among students. Teacher motivated students to answer the questions and took care that discussion will move on in the right direction.	Ensuring every student's participation and meaningful contribution in the discussion.	In addition to oral responses, chat boxes of online platforms in use and Google form (to get descriptive written responses) can be used in case any student cannot participate due technical problems at that time.
3.	Peer Review First year M. Tech - Technical Communication Writing Abstract	Step 1: Students are supplied with research articles (without its abstract) to read. Step 2: They are instructed to read given articles, to write an abstract for it, and to submit	Allocating student write-ups for review and Students' submission of review comments.	This is possible on Google Drive or using Google Docs facility. For written comments, students may type his/her response in the same document below the	5.	Case-based learning First year M. Tech - Technical Communication Professional skills - Conflict Management	Step 1: Resource material on conflict management is provided to the students. Step 2: Selected cases of conflicting situations in the professional	Sharing separate case study with all students.	Mail merge facility can be used to solve this problem.

world are shared
with students.
Step 3: Oral or
written
responses to the
questions in
case study are
invited from
students.

The difficulties faced before and during implementation of active learning strategies are addressed with technical assistance and experts of the computer engineering department in the college. Learning resources can be shared with students in online mode through eMail, on WhatsApp groups, on the online teaching platform in use, on MOODLE, etc. that are common and easily accessible to all the target students. The limitations in conducting online activities are to be considered before planning of it. All the participating students may have connectivity issues during the session. Some of the students having low competence in use of online tools/applications and platforms may hamper the individual as well as group performance. There may be typographical errors in the written responses by the participating students. Mobile devices that are commonly used by the students to attend online classes are not convenient in generating write ups. Proper identification of limitations and addressing them with adequate technological solutions with respect to online teaching-learning processes makes it joyful.

The research work studies an impact of online teaching-learning process in language and communication classes in engineering. The impact analysis has been carried out on the basis of student feedback that is conducted using Google Form. At the end of planned classes, online feedback from the experimental group has invited. Two hundred and eighty three students responded to it. Some of the important observations seek out from this feedback are summarized here. The percentage of students claiming their learning style visual learners is sixty-four. Eighty percent students have mentioned their comfort with online teaching-learning. Further, seventy nine percent students find online interaction with teachers useful. As online teaching rely more on e-resources as videos, graphics, power point presentations, images, maps, etc. it suits the visible learning style of the students. These observations lead to conclude most of the students' feasibility towards online teaching-learning process.

Online interaction with other students is convenient for sixty five percent students to serve purposes online teaching-learning. Eighty seven percent students endorse effectiveness of and trust in assessment methodology followed by teacher in online mode. After initial normal resistance from students in the implementation of online teaching-learning process and in use of active learning methods, they have accepted it. Overall, around seventy five percent students register their comfort with online mode of teaching-learning.

VIII. CONCLUSION

Technological solutions to the problems identified by

language teachers are suggested using easily available online tools and applications. A teacher and students basic computer and internet skill helps to overcome the limitations. Teacher's technological skill or constant technical assistance reduces wastage of time and brings effectiveness in the class. Along with this, a teacher should have pedagogical skills so that he/she could modify existing active learning techniques to suit the needs of content delivery in online or offline mode. Online or technology enabled sessions are devised keeping in view students of professional higher education. In the first one or two introductory sessions on the commencement of teaching activities, it is recommended to conduct training and hands on practice sessions for the students. As a teacher has freedom to create student centric active learning environments in the classroom with any suitable technique, language teachers can ensure effectiveness and learning with blending of ICT and active learning techniques. With this combination, first year engineering students get exposure to technology aided language learning experience. Modified active learning methods are effective in online distance teaching mode as well as in computerized language laboratory setup that is available in most of the engineering and other professional educational institutions. This study can be further extended in the context of different courses and in secondary and higher secondary classes. This work will be useful for second language and communication skills teachers, instructors and for industry trainers in designing their instruction strategy with active learning technique in online mode and its implementation. In future, blended mode of teaching can be used for enhanced learning at student end.

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