Poster Preparation and Presentation on Reading Club Activity: A case study to enhance Communication skills of Engineering students

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***Abstract*—Engineering education has undergone a significant transformation from traditional teacher-centered to student-centered classroom. Engineering education is mostly emphasizing technical courses. Due to globalization need to develop the soft skills of engineering students is increasing day by day as an industry requirement. Soft skills, a set of transferable skills play a vital role in the personal, academic, and professional development of engineering students. Effective Communication skills particularly in English is one of the global demanding soft skills for engineering students. Listening, speaking, reading, & writing (LSRW) are the foundation skills for effective communication skills in English. The present paper is an attempt to motivate students toward reading skills. The paper examines how reading non-technical books under reading club activity and developing and presenting posters on the same leads to enhance communication skills with the personal and professional development of engineering students. This Poster Preparation and Presentation on Reading Club Activity (RC & 3P approach) explores the relationship between soft skills and English proficiency from an engineering student's perspective. The authors have implemented this activity in the S. Y. B. Tech class for Personal Effectiveness and Body Language (PEBL) course. The proposed approach was implemented on 70 students of interdisciplinary branches and qualitative and quantitative assessment techniques were used to evaluate the outcomes and compare with the control group. The pedagogical implications based on the collected data and analysis were discussed. The researchers further explored from the findings that the selected approach reflected better communication skills, interpersonal skills, teamwork, time management, stress management, creative thinking, and presentation skills.**

***Keywords*—Reading Skills; Soft skills, Communication Skills; OBE, English Proficiency**

***ICTIEE* Track*:* Pedagogy of Teaching and Learning**

ICTIEE Sub-Track: The Art and Science of Teaching Pedagogical Insights for Educators aligning with NEP 2020

I. INTRODUCTION

Advancements in technology created an impact on all sectors. Even the education sector has gone through several transformations in curriculum, exam patterns, and teaching-learning. We observed a transformation in teaching-learning process, from a traditional teacher-centered to a student-centered process. Student-centered teaching-learning process is based on the IUCEE mantra, "I am teaching, are they learning?" (https://iucee.org). Different cooperative and collaborative approaches such as task-based approach, project and or problem-based approach (Sawant et al., 2023), and case-study based approach are incorporated in classrooms to experience joyful learning by students. The primary aim of engineering education is to train the students in the core domain, particularly in STEM (Science, Technology, Engineering, and Mathematics), the foundation of engineering profession. Nowadays due to globalization and industrialization to survive in this competitive era, engineering students must acquire soft skills and English proficiency with technical skills for future careers. These soft skills are considered as employability skills (Markes, 2006) or job readiness skills, or 21st century skills, referred to as 'transversal competencies' (Cruz et al., 2020). Educational stakeholders and accreditation bodies namely NBA, NAAC, AICTE, UGC, and others emphasized to include these soft skills related courses in engineering curricula to enhance job readiness of students in global market. NBA (National Board of Accreditation) has given 12 graduate attributes that are considered as Program Outcomes (POs) in the Outcome Based Education (OBE) framework, out of 12, PO_9 deals with individual and teamwork, PO_10 is specially

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assigned for Communication, and PO_12 for Lifelong learning. (https://www.nbaind.org/Files/engineering-programs.pdf)

Teaching soft skills in engineering classroom is an active research area focusing on deeper understanding and its' positive impact on students. The purpose of this research is threefold. The first purpose is to arouse interest towards reading skills, the second is to enhance English communication skills (LSRW), and the third is to develop the soft skills of students for personal and professional development through reading non-technical book, preparing poster in team, poster presentation and writing review of the book.

English reading skills is one of the neglected skills in engineering education due to lack of awareness or motivation towards the significant role of reading in the holistic development of students. Reading in English leads to knowledge updating, vocabulary development, writing skills, and comprehension skills. Most of the engineering resources are available in English language. Reading skills is vital for academic and professional development. Philbin highlighted in his work on adequate focus on both engineering knowledge and professional skills (2022) Engineering knowledge and professional skills are interdependent to become successful in career. To address professional skills many engineering institutes offer professional courses. NEP 2020 also provided a broad spectrum of all these courses to be included in curricula as CBCS courses for the holistic development of students. With the advent of globalization and industry 4.0, the world has become closer and boundaryless. In the era of globalization international projects are on the increase, as is cross-cultural communication and cooperation especially in international engineering practice. (Ying, Xu, L. & Philbin, 2023). To tackle the global scenario engineering students' professional skills are the necessary accompaniment to technical skills. Among these professional skills communication skills in English are considered as most important. Due to rapid development in ICT, our work culture also shifting towards online mode. To bridge the gap communication plays an important role and engineers need to express clear and correct technical information to increase work efficiency. Some surveys and insights from employers are insisting on developing communication skills of engineering students. In this context, engineering students are trained to be effective communicators in English language. To develop communication skills in the OBE framework has given flexibility to faculty to select appropriate tools or techniques for hands-on practice as communication needs practice. Communication skills were subdivided into language, communicative ability, and interpersonal skills (Ooi &Ting, SH 2015). To arouse interest among engineering students is a challenging task for faculty and the inclusion of active and innovative techniques to enhance English reading skills is beneficial and can result in enhancing the English communication skills of students. The present paper is an attempt to motivate students to read and develop professional skills such as communication, teamwork, time management, and presentation skills. The author selected cooperative and collaborative approaches to design the RC & 3P approach, both cooperative and collaborative learning have roots in social constructivism (Sawyer, Jeremy, and Rita Obeid. 2017), cognitive theories of Vygotsky (1978) and Piaget (1951).

II. Literature Review

Research has been done on engineering education focusing on the teaching-learning process. We reviewed several resources for reading skills, communication skills, poster presentation, and soft skills from an engineering perspective. Crawley et al. (2007), mentioned in their research that rethinking is needed in engineering education: The purpose of engineering education is to provide the learning required by students to become successful engineers. According to Ying Wu and team (2023), communication skills is one of the important soft skills for engineering students from OBE perspective, and recommended to offer courses for language skills enhancement as per market demand. They further suggested to train the students to communicate using digital media and strengthen their practical application ability from the communication point of view. Ooi, K. B. Ting (2015) highlighted that communication skills are considered the most crucial among soft skills, making it essential to focus on enhancing students' language proficiency, communicative abilities, and interpersonal skills. They further recommended incorporating activities like role plays, which provide learners opportunities to practice and develop effective communication skills in real-world workplace scenarios. Brigitte Lenong (2020) reflected on reading projects. The data collected by the author is genre-wise and analyzed to show improved learning by reading projects. A study by Martin et al. (2005) involving chemical engineering graduates in South Africa revealed that professional success relies not only on technical knowledge and skills but also on key attributes such as communication, interpersonal skills, teamwork, and management skills. He further elaborated that communication relies on interpersonal skills, while teamwork and management are built upon effective communication.

Regarding reading skills, Nazzem Mohammad Abdullah Attiyat (2019) in his review paper revealed the impact of pleasure reading on reading comprehension and writing skills. Kim and Lanzel (2021) studied the effect of reading motivational books on the attitude change of junior and senior business major students of the US university. They assigned only one motivational book and studied the attitude change of students.

Regarding poster presentation Rachana Desai et.al (2022) implemented poster presentation as an online assessment tool for Engineering Mathematics, F. Y. B. Tech course reflected in confidence building, concept clearing, and life learning skills. Through the review of the literature, the authors found that no research work has been done on the selected approach. Hence, the authors worked on the selected approach.

III. Motivation Of Study

Active learning techniques are based on the learning-by-doing approach. To develop communication skills, one needs to practice. It's not one lecture, one day, or one month task. Demonstration by students is needed to develop communication skills and cooperative and collaborative active learning techniques such as think-pair-share, role play, brainstorming, just-a-minute, puzzle or game-based learning, group

discussions, debating, jigsaw, guided design, modified reciprocal teaching (Kadam & Sawant, 2020), storytelling, and so on provide the stage to perform so that students actively participate in a particular activity to develop communication and other transferable skills (David, 1993). In this paper, the authors applied an innovative approach for large class students with the intention of active involvement of all students to develop their communication in English and soft skills.

A. Objectives of Study:

1. To assess the effect of participating in a reading club activity on improving students' reading skills.
2. To examine the role of poster presentations in enhancing the communication skills of engineering students.
3. To examine the impact of the RC & 3P approach in improving communication skills among engineering students, fostering both personal and professional development.

IV. METHODOLOGY

A. Experimental Set-up: As per the need analysis, industry and stakeholders' requirements, engineering curricula are updated, and or revised. For the holistic development of students, to train them as per global market requirements, and or make them employable, PSD courses are added to the curricula. The major challenge in PSD courses is to create interest among students and active involvement of all students in classroom teaching-learning. The reputed empowered autonomous engineering institute in western Maharashtra incorporated PSD (Professional Skills Development) courses for the personal and professional development of students. The Reading Club activity and Poster Preparation & Presentation (RC&3P) approach was implemented for Personal Effectiveness and Body Language (PEBL), an elective lab course under PSD courses of S. Y. B. Tech. in Sem III, Academic Year 2023-24. This course has two multidisciplinary batches divided into two groups, hard branches, and soft branches. We executed this approach on soft branch students comprising Computer, CSIT, ETC, and AIML as an experimental group to study the desired outcomes of the approach. The control group has Mechanical, Mechatronics, Automotive Technology, Civil, and Electrical branch students. The strength of both groups is 70 students. The activity was carried out throughout the semester with other syllabus topics and 4 lab sessions were utilized for execution and assessment purpose.

B. Implementation: To study the objective of this research the researcher announced the activity in detail in the first lab session. As per the ISE plan, this activity has a weightage of 30% as an ISE (in semester evaluation) component. For active participation, the researcher announced peer assessment for poster presentation. Every group had to assess 10 posters as per the criteria. The author provided the detailed roadmap of this activity as per the discussion on the official WhatsApp group of course including groups for peer assessment and assessment criteria. The selected approach is executed continuously throughout the semester with other units from syllabus. The heterogeneous interdisciplinary groups of three to four students and or pairs of students were formed. The students were given freedom to form a group of three students or a pair of students. Only the condition was mix-branch students per group. For smooth functioning of group activities, one group leader is assigned. Students were informed to select one non-technical book which is beneficial for personal and professional development, provided the book is in English language, and instructed not to repeat the book. Students were instructed to send the book selected, author name, group members, and if available soft copy of the book on the official WhatsApp group of our batch to form the WhatsApp library for those who want to read beyond the selected book as per their convenience. The researcher took the informal review of activity in every lab session. On the 6th lab session as per the lab plan mid review to know the progress of reading was conducted and considered as an ISE of 10 marks for the time management topic as per the syllabus. The time allotted for mid review was 3 minutes per group. A fruitful discussion on how to prepare poster and how to write book review as per the expectations was done in the same session. To improve the writing skills of students the students were informed to prepare one-page review individually with justification on how the selected book is beneficial for personal and professional development in correlation with the PEBL syllabus and submit final review in group after brainstorming. Review writing is based on prior knowledge of reading comprehension skills learnt in English Proficiency course. The students were guided to do micro planning for better performance and informed to prepare poster as per their creativity. Poster preparation activity helped students to develop team work through peer learning. Office hours were announced for further guidance for poster preparation and review writing on Tuesday and Thursday from 5:00 pm to 5:40 pm. Students met faculty during office hours and cleared their doubts. As per the plan final poster presentations were conducted in the last two practical sessions and the remaining were conducted during office hours of the last week of the academic calendar. Sample screenshots of the WhatsApp group and review writing submission are as given in Fig. 1.

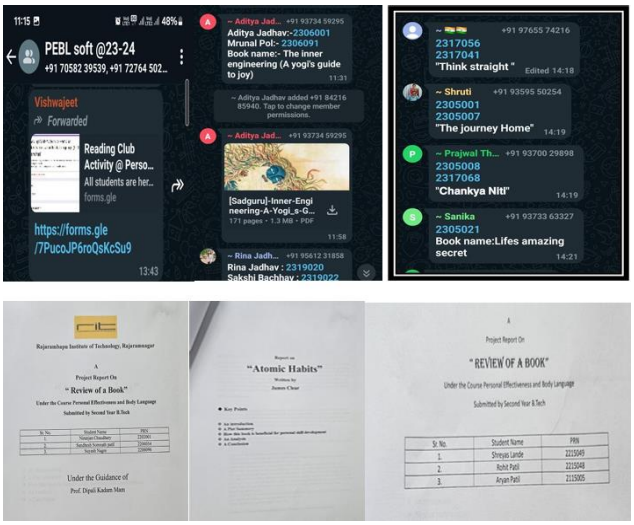

Fig. 1. Book selection, soft copy of book, and review writing screenshots

1. *Main steps of RC & 3P approach are as follows:*

a. Group Formation

b. Selection of book

c. Book reading
d. Collecting review of book
e. Mid Review Presentation
f. Preparation of poster
g. Individual book review writing focusing on how the selected book is beneficial for personal and professional development in correlation with the content of PEBL course
h. Final review writing in group after brainstorming and compilation and submission
i. Poster Presentation (8+2 minutes)
j. Peer assessment

2. The skills addressed through this approach are:

a. Reading
b. Listening
c. Communication skills in English (Oral & written and non-verbal)
d. Teamwork
e. Presentation skills
f. Creative and critical thinking
g. Interpersonal skills
h. Time management
i. Stress management
j. Leadership skills

Figures 2 and 3 showcase students' active participation in the poster preparation, presentation, and peer assessment process.

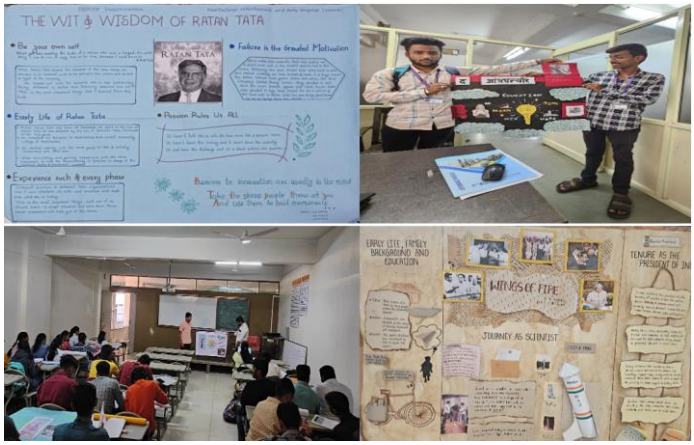

Fig. 2. Glimpses of posters and poster presentation

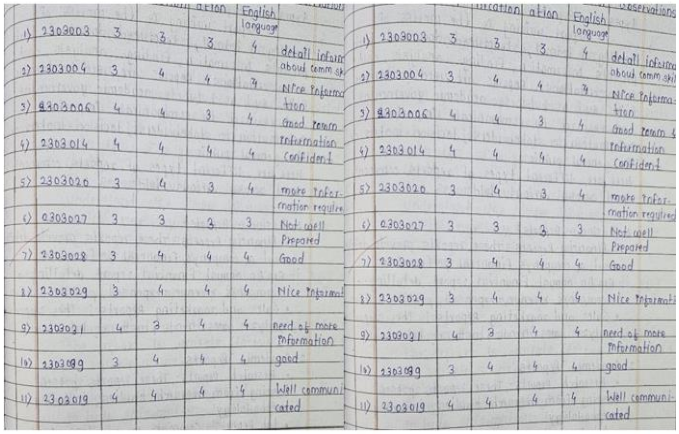

Fig. 3. Samples of peer assessment

V. Assessment

To assess the impact of implementing the RC & 3P approach on the communication skills of students, we used both qualitative and quantitative assessment methods. Qualitative assessment was carried out by using pre-defined and already shared rubrics and oral feedback from students. The main parameters of rubrics are content or information shared, use of English language including vocabulary and lesser grammatical mistakes, effective verbal communication (oral and written), body language and confidence, teamwork, time management, and poster design and use of poster during presentation. As an add on to increase the involvement of all students the faculty conducted peer assessment task. The students were announced and guided how to do peer assessment and asked to assess 10 groups as per the allotment done by faculty by using standard parameters. Through the peer assessment, the researcher addressed active listening, critical thinking, communication skills, and other soft skills. All peer assessment forms were collected and analyzed for assessment and record purpose.

The quantitative assessment was conducted using a rating scale through Google form. Responses were evaluated on 1 to 5 scale, where 1 represented 'strongly disagree' and 5 indicated 'strongly agree'. At the end of the activity random oral feedbacks from students about the implemented approach were collected for record purpose. The impact of the selected approach was assessed through CO attainment analysis of the experimental and control group.

VI. Results and Discussion

The impact of the proposed approach on students' communication skills leading them towards personal and professional development was assessed quantitatively and qualitatively. For quantitative assessment, the authors used Google form and for qualitative assessment pre-defined rubrics and oral feedbacks were collected. The authors then compared the CO attainment of the control group, students taught by the traditional method (chalk and talk method) and the experimental group, on whom the selected approach was incorporated. The attainment of both groups was calculated revealing that the experimental group showed significantly higher attainment compared to the control group.

The COs (course outcomes) of PEBL course are given below,

1. Develop skills to build self-esteem and positive attitude.
2. Develop interpersonal skills characterized by effective communication and conflict resolution.
3. Demonstrate responsiveness towards time, stress, and health issues.
4. Interpret the non-verbal behaviour of a person.

This activity addresses 70% syllabus of PEBL. The topics covered in this approach are Personality development, Self-awareness, Time management, Art of communication, Stress management, Creative thinking, Decision making, and no-verbal codes in Body language. The RC & 3P approach is mapped with all COs. The average CO attainment of both control and experimental group is given in Table I.

TABLE I
AVERAGE CO ATTAINMENT OF PEBL

Hard Branches (Control Group)	**No. of Students**	**CO Attainment (%)**	**Soft Branches (Experimental Group)**	**No. of students**	**CO Attainment (%)**
AUTOMOTIVE TECH	1	59	CSE	28	70.87
CIVIL	20	65.5	CSIT	7	71.12
ELECTRICAL	10	68.15	ETC	21	72.70
MECHANICAL	23	65.07	AIML	14	72.42
MECHATRONICS	16	60.94			
Overall attainment	**70**	**63.732**	**Overall attainment**	**70**	**71.7775**

The impact of appropriate implementation of the selected approach is reflected in overall CO attainment. The average CO attainment of the experimental group is near about 72% whereas of the control group it's 64%. The increase in attainment of the experimental group by 8% is the reflection of implementation of the selected approach. The faculty calculated CO attainment of both groups as regular OBE practice to plan for the next academic year. The comparative analysis of both groups CO wise attainment is given in table II.

As per the graph in Fig. 4, a major difference was observed in CO2 attainment, dealing with the development of interpersonal skills characterized by effective communication. For the control group the attainment of CO2 is 58% and for the experimental group it's 71 % which is greater than control group. We have seen in the methodology section that the present approach provided opportunities to experimental group students to develop interpersonal skills through cooperation and collaboration with other students and active participation in all sub tasks which is reflected in CO attainment of that CO. The comparative analysis highlighted the increase in CO attainment of the class where the researcher conducted this action research as compared to the class which is taught by traditional method.

TABLE II
COMPARATIVE ANALYSIS OF COURSE OUTCOMES ATTAINMENT

Course Outcomes	CO attainment of control group in % by using Traditional mode of delivery	CO attainment of experimental group in % by implementing R & 3P approach
Develop skills to build self-esteem and positive attitude.	64	69.20
Develop interpersonal skills characterized by effective communication and conflict resolution.	57.60	70.62
Demonstrate responsiveness towards time, stress, and health issues.	62.70	69.20
Interpret the non-verbal behaviour of a person.	61.90	72.80

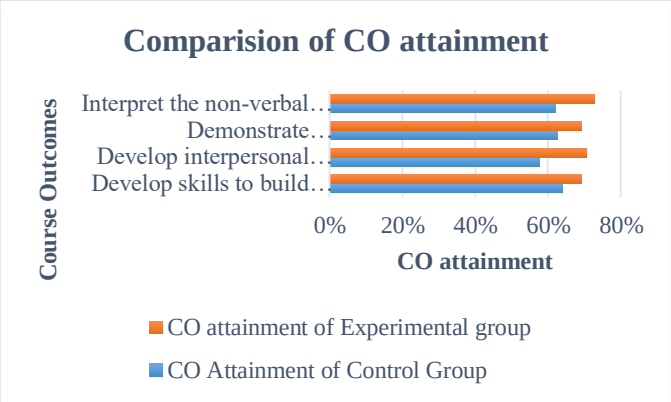

Fig. 4. Comparative analysis of CO attainment

At the end of the semester comprehensive assessment of 40 marks, comprising 20 marks for written and 20 marks for oral exam was conducted for both groups as per the curriculum structure. The oral exam was based on syllabus having group task of 10 marks and 10 marks were for oral on syllabus. The assessment was done by using predefined rubrics having content or information, communication skills, use of language, body language as main parameters. Table III illustrates the performance of control and experimental group in oral exam. From the result there is a considerable difference in the performance of students. The experimental group students showcased improved performance in communication skills as compared to control group students.

TABLE III
PERFORMANCE IN ORAL EXAM

Oral exam marks	Control group	Experimental group
18-20	0	11
15-17	22	28
10-14	33	23
Less than 9	15	8

The comprehensive written exam was conducted for 1 hour including two writing tasks as per the syllabus of 10 marks each. The assessment was done by using parameters such as information, use of language, grammatical accuracy, and logic. Table IV represents the performance of written exam and the result analysis highlighted that there is slight improvement in written communication skills of experimental group compared to the control group.

TABLE IV
PERFORMANCE IN WRITTEN EXAM

Oral exam marks	Control group	Experimental group
18-20	5	9
15-17	26	25
10-14	36	36
Less than 9	3	0

The impact of the activity on the experimental group students was analyzed through quantitative assessment. The link of Google form having 10 statements based on planning and execution of activity, impact on students, role of faculty etc. was shared to students and responses were collected and analyzed. The students gave ratings on a scale from 1 to 5, ranging from strongly disagree to strongly agree, in response to the statements outlined in Table V.

TABLE V
RATING METHOD

Statements
The activity is well planned and executed as per the plan
The activity enhanced my creativity through poster creation
The approach helps me to improve my communication skills in English language
The selected approach is learning by doing approach.
This activity helps me to manage time efficiently
Office hours are utilized for proper guidance and motivation
Peer assessment was an opportunity to develop our interpersonal and observation skills
I think this approach should be implemented in technical courses to enhance technical knowledge and technical communication.
The limitation of this activity is time constraint
The assessment done by faculty is not as per pre-defined rubrics.

The rating method analysis revealed that implementation of selected novel approach to PEBL course reflected in improved learning in communication skills, team building, time management, interpersonal skills and, written communication. On an average 75% students gave positive rating to the implemented activity. Fig. 5 displayed the statement wise responses focusing on positive impact of the selected approach on experimental group students.

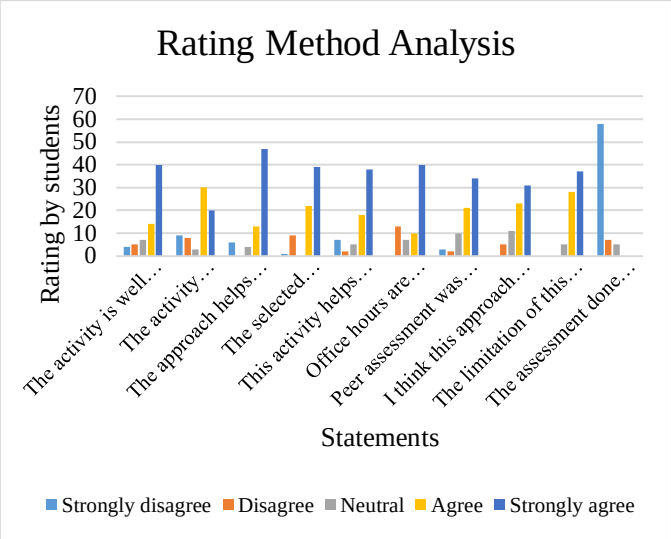

Fig. 5. Quantitative Assessment by Rating Method

The authors collected oral feedback by asking questions and analyzed it for research purpose. Some responses are mentioned here.

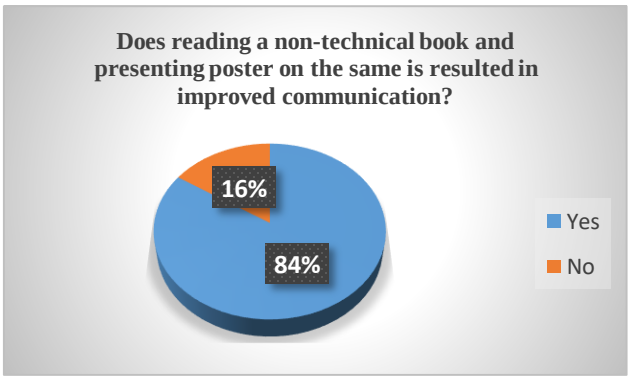

Fig. 6. Oral Responses Analysis of Que. 1

As per the pie chart 84% students responded that the activity is reflected in improvement in communication of students. Students shared their experiences how they got the opportunities to communicate throughout the activity. They explored group communication, mid-review presentation, and poster presentation gave chances to enhance communication.

In another question response showcased in Fig. 7, 71% students agreed that this activity helps them to become aware about themselves, their skills without fear. They said that this activity boosts their confidence and reduced their stress of presentation in front of class which will be beneficial them during other academic activities and campus placements.

To analyze the impact of experimental group students on communication in English language, in response to the question asked by researcher on English Communication as per pie chart in Fig. 8, 86% students replied that this activity is the demonstration of English Communication skills by addressing all four basic language skills: listening, speaking, reading, and writing and students actively participated in sub tasks from reading of book, review writing, peer assessment and poster presentation. The students further explored role of English

communication for engineering students as an international language.

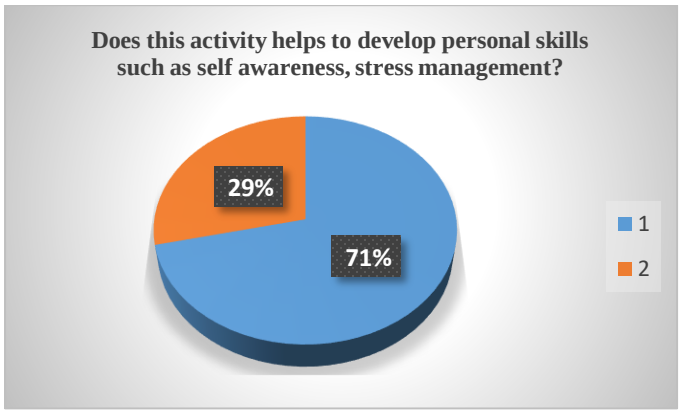

Fig. 7. Oral Responses Analysis of Que. 2

Fig. 8. Oral Responses Analysis of Que. 3

VII. Findings and Recommendations

After the assessment and thorough discussion on results the author highlighted main findings of this activity.

a. Communication skills: The selected approach helps students to develop their English communication skills as students read the selected English book which helps them to learn new words i.e. vocabulary development. Through one page review writing students demonstrated written communication and poster presentation explored oral communication skills and non-verbal communication. In peer assessment task students demonstrated active listening skills. Overall each step of this approach contributed to enhancing students' English communication skills.

b. Team work: As reading and poster preparation and presentation approach is a cooperative and collaborative technique, the students demonstrated team work from selection of book to poster presentation. All the activities are carried out in team, motivated them to work in team in future. This activity helps them to develop team work for decision making and problem solving as an aspect of personal and professional development.

c. Time management: The students are more efficient to manage time as per allotted time both for presentation and QA session. Students demonstrated time management in mid-review presentation also. They also demonstrated on how to avoid procrastination through active involvement in all sub tasks.

D. Creative and critical thinking: This activity demonstrated improved creative thinking through poster preparation and presentation whereas during the question-answer session and peer assessment students explored critical thinking

e. Interpersonal skills: The whole activity is based on interpersonal skills where students collaborated with each other, interacted with faculty, brainstormed, and compiled the review of book. The coordination in between them throughout the activity depicted their interpersonal skills.

Recommendations:

As per the feedback received from students, this approach can be implemented in core technical courses to develop technical knowledge and technical communication skills. The researchers will consider research papers, articles, book chapters, or any other reading material for reading skills. There will be scope for collaborative research at the interdisciplinary level and this case study will help other researchers to apply at the multidisciplinary level. Even we can organize poster presentations of selected posters so that students get motivated to participate actively in such type of 'learning by doing' activities. The impact and contribution of this approach on key areas like campus placement, pursuing higher education, and entrepreneurship development of engineering students can be explored in future research.

Limitations of study:

The only limitation of this activity is the time constraint. The flexibility in time table can help to work properly on tasks.

Conclusion

This activity addresses 70% syllabus of PEBL. The sample Advancements in technology affected all sectors and education is one of them. Specifically in engineering education STEM (Science, technology, Engineering, and Mathematics courses play a major role. Earlier the focus of engineering education was only on these courses. Now due to transformations in every field and global market requirement, the need to train students in professional skills and soft skills is in demand. Even NEP 2020 expected holistic development of students and for that students need to train from personal effectiveness skills to professional development skills and Communication skills in English language is one of the most important skills both for personal and professional development of engineering students to achieve the desired success in their field. The present paper did the experiment as a case study in S. Y. B. Tech PEBL course by implementing reading club activity and preparation and presentation of poster approach. Though the task is huge, with minute planning and proper execution, created positive impact on students to develop effective communication skills. From cognitive levels perspective this approach develops understanding through reading and comprehending, application by poster presentation and review writing, analysis through peer assessment and book analysis, and at some extent creation level by creating posters (Bloom, 1964). The qualitative and quantitative assessment of the selected approach resulted in improvement in English communication skills including LSRW skills, interpersonal skills, team work, stress management, time management, decision making, and body language as part of non-verbal communication skills. These skills are foundation

skills to be appear for campus placements, higher education, or to be an entrepreneur, hence important for personal and professional development of an engineering student.

REFERENCES

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1964). *Taxonomy of educational objectives, 2*, New York: Longmans, Green.

Bridges, David. (1993). Transferable Skills: A philosophical perspective. *Studies in Higher Education - STUD HIGH EDUC, 18*, 43-51.

Brigitte Lenong (2020). Engaging University Students In Reading Projects To Enhance Their Learning. *IJAEDU- International E-Journal of Advances in Education, 6*(16), 124-130.

Crawley, E., Malmqvist, J., Östlund, S. and Brodeur, D. (Eds) (2007), Rethinking Engineering Education: The CDIO Approach, *Springer*, New York.

Cruz, M. L., Saunders-Smits, G. N., & Groen, P. (2019). Evaluation of competency methods in engineering education: a systematic review. *European Journal of Engineering Education, 45*(5), 729–757.

https://www.nbaind.org/Files/engineering-programs.pdf, Manual for UG Engineering

K Kim, M Lanzl . (2021). The Effect of Motivational Book Reading on Student's Attitudes Change. *Journal of Higher Education Theory and Practice, 21*(7), 103 – 115.

Kadam, D. M. & Sawant, S. Y. (2020). Modified Reciprocal Teaching: Cooperative Learning Technique for Enhancing Communication Skills of First Year Engineering Students. *Journal of Engineering Education Transformations, 33,* 532-536.

Markes, I. (2006). A review of literature on employability skill needs in engineering. *European Journal of Engineering Education, 31*(6), 637–650.

Nazzem Mohammad Abdullah Attiyat. (2019). The Impact of Pleasure Reading on Enhancing Writing Achievement and Reading Comprehension. *Arab World English Journal (AWEJ), 10*(1), 155-165.

Ooi, K.B. & Ting, S.H. (2015). Employers' emphasis on technical skills and soft skills in job advertisements. *The English Teacher, XLIV* (1), 1–12.

Philbin, S. (2022). Engineering Education: Research and Professional Skills Development. *Proceedings of the American Society for Engineering Management 2022 International Annual Conference. G. Natarajan, E.H. Ng, P.F. Katina, and H. Zhang eds.*

Piaget, J., & Inhelder, B. (1956). The child's conception of space. London, England: Routledge and Kegan Paul, Ltd.

Rachana Desai, Nandini Rai, Jitendra Karekar, A.S. Desai. (2022). Poster Presentation: A novel online assessment tool for motivation, relevance and foundation for research in Mathematics. *Journal of Engineering Education Transformations, 35*(1), 168-174

Sawant, S. N., Ghatage, P. S., & Patil, S. K. (2023). An Attempt to Enhance the Visualization, Imagination and Drawing Skill of Freshman Engineering Students through Problem Based Learning Approach. *Journal of Engineering Education Transformations, 36*(Special Issue 2).

Sawyer, J., & Obeid, R. (2017). Cooperative and collaborative learning: Getting the best of both words. *How we teach now: The GSTA guide to student-centered teaching*, 163-177.

Vygotsky, L.S. (1978). Mind in Society: The development of the higher psychological processes. Cambridge, MA: Harvard University Press

Wu, Ying, Lin Xu, and Simon P. Philbin. (2023). Evaluating the Role of the Communication Skills of Engineering Students on Employability According to the Outcome-Based Education (OBE) Theory, *Sustainability, 15*(12), 9711.