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Comparative Study on Students' Performance Using Gallery Walk and Poster Presentation Techniques

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***Abstract*— In Outcome-Based Education (OBE) use of active learning (AL) techniques is the need of time to engage students and to ensure achievement of course outcomes. AL is a teaching technique in which the students' learning remains at its center and focuses on how students learn rather than what they learn. Several AL techniques like think-pair-share, flipped classroom, jigsaw, gallery walk, poster presentation etc. are being practiced for achieving effective learning and enhancing students' performance. However, no much study has been reported in the literature on learning strategies that facilitate students learning effectively. In view of this, in the present paper an attempt is done to carry out a comparative study on using two different AL techniques viz. gallery walk (GW) and poster presentation (PP) to know their effectiveness with regard to the performance of First Year B.Tech. students in End Semester Examination (ESE) of the course 'Basics of Civil Engineering' (BCE). Specific topics that were difficult for understanding were taught by implementing GW and PP methods and the CO attainment results are compared with the traditional (TRAD) method. Results indicate that by implementing AL techniques (GW and PP), CO attainment gets increased by approximately more than 2.72 times the CO attainment achieved by TRAD method. However, implementing PP technique causes a little increase (~4.60%) in CO attainment over GW technique. Study concludes that GW and PP techniques contributes in improving students' performance, encourages them for active engagement and also increases the retention levels in their learning.**

***Keywords*— active learning technique; course outcomes; gallery walk; outcome-based education; poster presentation; students' performance.**

***JEET Category*—Research, Practice)**

I. INTRODUCTION

IN India, the higher education system has been improved to a greater extent in view of reforming the youth potential into human resources.

In India, the Outcome Based Education (OBE) has been implemented recently in engineering education. India became a signatory member of Washington accord in June 2014. The National Board of Accreditation (NBA) performs the accreditation of the engineering programs based on OBE. In OBE, the focus is on student-based learning wherein the main objective is to impart the skills required by students. The expected outcomes are stated in terms of program educational objectives (PEOs), program outcomes (POs) and course outcomes (COs) (Ravindran and Lenin, 2016). OBE is a pedagogical method in which the skills, knowledge and abilities that are expected to be demonstrated by the students at the end of a particular course or program are predefined. Moreover, OBE is a strategic method that contributes in establishing competency-based learning values and enables the teachers to keep a track of the ongoing progress. Teachers take appropriate measures to assist students, if they fail to achieve their academic goals. OBE provides a mechanism for students to clarify their doubts and keep them motivated in their educational journey (Borkar, 2021). According to the propounder of the OBE system, 'the OBE is nothing but focusing and organizing an institute's entire programs and instructional efforts around the clearly defined outcomes which all students to needs to demonstrate when they leave the institute (Rao, 2020). The conventional or traditional method of teaching lacks in providing focused learning, interactivity, and doesn't encourage critical thinking skills and hence, OBE is favored to TRAD teaching (Wadhwa et al., 2015).

Active learning is an integral part of OBE, as successful completion of the task by student, indicates system's effectiveness and curriculum. Several active learning approaches are used for effective learning experiences. The use of active learning methods plays a vital role in engaging the students and enhancing their performance in the examinations and also making their learning experience joyful. Hence, the use of active learning techniques is widely done these days in engineering education to enhance students' participation during classroom teaching. As active learning inspires students to take a central role in their individual learning, it prepares them better for both higher education and the workplace. Research has shown that knowledge retention can be significantly increased by implementing cooperative and collaborative active learning strategies into the teaching. The cooperative and collaborative techniques are the varieties of active learning techniques. In

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cooperative methods students have to work with others to help them achieve their individual goals, while in collaborative methods, the students have to work together on a shared goal, (Keyser, 2000).

A broad range of active learning techniques are used which engage students as active participants in their learning during class time with their instructor and involve some number of students working together during class, but may also involve individual work. These techniques range from short, simple activities like one minute paper, problem solving and paired discussions, to longer, involved activities or pedagogical frameworks like case studies, role plays, and structured team-based learning as shown in Fig.1.

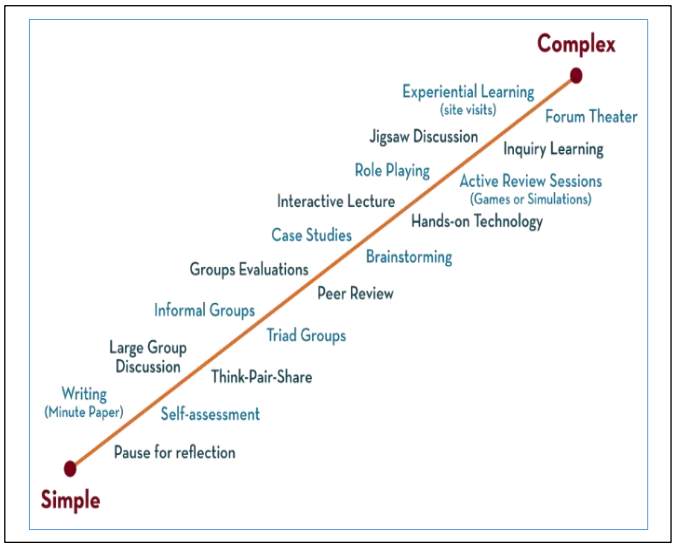

Fig. 1: Simple and complex active learning methods
(Source: https://bitly.ws/TvZm)

A. Traditional Method

The traditional or conventional teaching is considered to be a long-established custom that society conventionally used in schools. Further, this method is a teacher dominant or teacher-centered, examination oriented and focuses mainly in remembering and reproducing the facts, principles and theories of learning to impart book knowledge to students. In olden times, traditional teaching methods were very commonly adopted as the teachers were expecting that their students should learn a fixed knowledge and obtain good marks or grades in the examinations (Wang, 2022).

The teacher uses the chalks and blackboard for explaining the concepts to the students. The main points related to the topic being taught are written on the blackboard which would be noted by the students in their notebooks. When the teacher finishes the lecture, students try to memorize these notes or points written in the notebooks (Suchi, 2017). The traditional method of teaching is found to be passive because of the poor listening skills of the students. Amongst the four learning skills viz/, learning, speaking, reading and writing (LSRW), the listening is considered as the most important skill, as it benefits in understanding the information appropriately. In case, a student fails to understand the information shared by the teacher, it would not be possible for him/her to interpret it. Further, it becomes very difficult on the part of the teacher to state the same sentences repeatedly. Similarly, it becomes difficult to retain the students' attentiveness for longer time span when the teachers adopt chalk and talk method in teaching (Suchi, 2017).

One of the oldest and most commonly used methods of traditional teaching is the 'lecture method' which is based on the philosophy of idealism. In this method, teacher gives explanation of the topic to the students and emphasizes on the presenting the content. The term 'lecture' has been derived from the Medieval Latin word 'lectare', the meaning of which is 'to read' loudly. In the 15th century, the books were expensive as the development of the printing press was in the progress, and few students could be able to afford such books, so masters use to read such books and then add their comments. In the lecture method, the factual information is transmitted from a teacher to students or group of students. Thus, the lecture method is considered to be a one-way channel of sending the information. However, this method is found to be more popular the world over as it is a very suitable and low-cost teaching method (Khalid et al., 2018).

B. 'Gallery Walk' Technique

'Gallery Walk' technique is a classroom-based active learning technique in which the students are encouraged to build on their knowledge about a topic to improve their higher-order thinking, interaction and cooperative learning. Gallery Walk is a type of discussion technique which allows the students to get out of their chairs and into an active engagement mode (Wahyuni, 2015). The important benefit of this technique is that it offers flexibility to the students and instructor as well. It can be conducted by making use of computers, with pieces of paper on tables, or with posted chart paper and can be scheduled for 15 minutes or for several class periods.

The students get actively engaged as they walk throughout the classroom and share ideas, and respond to important questions, images, and problem-solving situations in a stress-free way (Namaziandost et al., 2018). In other words, the technique provides the students an opportunity to share their thoughts in a more friendly and supportive way, while for teachers or instructors it offers a chance to measure the student's depth of understanding of particular concepts. The students may provide their comments on the responses or the work products prepared by the students' groups who have previously visited the posted charts papers (Starting Point-Teaching Entry level Geoscience, 2023). The work products may include anything from an open-ended question about the content being taught, to photographs, posters related to the content, or even to finished projects. The mechanism of gallery walk and the rotation scheme employed while conducting the technique are shown in Fig.2 and Fig.3 respectively.

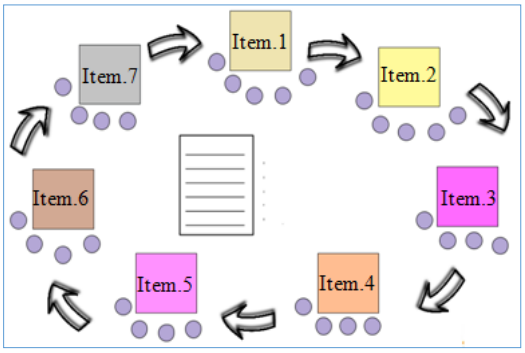

Fig.2:-Mechanism of Gallery Walk Technique
(Source: https://www.google.com/search)

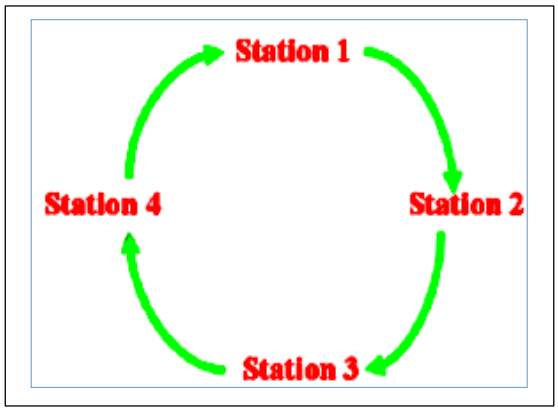

Fig. 3: Gallery Walk Rotation Scheme
(Source: https://www.google.com/search)

The various steps involved in the gallery walk technique are as given below (Starting Point-Teaching Entry level Geoscience, 2023).

1) Generation of questions:
The teacher or instructor frames four to five questions for a class of 20. However, for larger classes the teacher either writes more questions or repeat the same set of four to five questions, by posting the same question set in different sections of the class.
2) Writing the questions on sheets or white boards:
The teacher writes the Gallery Walk questions on large sheets of self-adhering chart, post-it paper, self-supporting flip charts, whiteboards (approx. size:0.90m x 0.60m), or simply write questions on pieces of normal loose leaf paper well before the class time. One question is to be written for one sheet of paper. Whiteboards are preferred as they can be used over and over again.
3) Posting the questions on the walls of classroom:
The teacher posts the questions on the wall around the class, providing adequate separation space between sheets as this arrangement helps students to walk around from one place to another to view the questions and answer them. Alternatively, questions can be placed on desks dispersed throughout the class.
4) Preparing the students for conducting the gallery walk:
The teacher gives instructions to the students before starting the Gallery Walk about its process and informs about the important components of the evaluation.
5) Grouping of students and assigning roles:
Teacher divides the whole class of students into teams or groups of three to five students. Provides each group with a different colored marker, or pen. Teacher assigns the role as 'representative' from each group who would communicate any questions or problems to the teacher or instructor. This assigned role compels the group members to channel their discussion through another member of the group.
6) Initiating the gallery walk from a starting station:
To begin with the teacher directs the student teams or groups for giving visits to different charts or stations. Each team upon arriving at the station, writes comments for the question posed at the station. In order to avoid chart untidiness and rambling comments, the recorder from the group is encourage to write in a short-bulleted format very close to the top of the chart.
7) Rotating students and adding comments:
After a short period of time, say three to five minutes the teacher instructs the student groups to "rotate" and the group then rotates, clockwise, moves to the next station. Upon arriving at the new station, the student group can read and criticize the comments of the previous group who answered that question or they can provide their own thoughts. Thus, the group adds new comments and responds to comments left by the previous group. The students write their thoughts below the contributions done by the previous group who answered that question and this continues till the last question. In order to have the involvement of all the group members, the representatives or recorders appointed are switched at each station.
8) Monitoring the students' progress by teachers:
As groups rotate, the teacher observes the student's participation in the activity and also gives inputs to the students. The teacher can move around in the class and interacts with different student groups.
9) Returning of students to their starting station:
The student groups continue to review the answers already contributed by previous groups, adding their own comments and this procedure continues until all the groups have visited all stations and returns to the station at which they started. Teacher instructs the students to record their original (starting) question and to sit down in their teams to begin the "Reporting" stage.
10) Synthesizing the comments and reporting:
In this step, the teacher instructs the student groups to synthesize what has been written about their original discussion question. The student groups are allowed for about 10 minutes to synthesize comments. The "reporter" or the "representative" appointed earlier, summarizes the group's comments with the help of other group members and makes an oral presentation to the class. The oral report should not exceed five minutes in length.
11) Gauging the students understanding by teacher:

During the "Reporting" stage, the teacher reinforces correctly expressed concepts and corrects for misconceptions and errors (Starting Point-Teaching Entry level Geoscience, 2023).

C. Poster Presentation

The posters are the tools which are created as a combination of text and pictures and designed for public places. A poster is designed to attract the attention of the people, to send the messages to the targeted audience, and to create the impression that the message given in the minds of the public can be converted into an action. Selling a product easily to people, increasing the audience of a film, increasing a politician's vote and so on are some the examples stating the purpose and importance of developing posters. Posters are considered to be attractive, colorful learning tools that improve the learning environment.

The use of posters in learning and teaching environments is extensively done by the teachers from different disciplines for conveying various types of information and messages to students. In the present education system, use of poster presentations in the classrooms is done for improving students' active participation. The poster presentations are found to be suitable for all classes as they contribute in enhancing cooperative learning, encouraging creativity, independent learning and also the research and communication skills. Poster presentations involve task-based activities where in the students develop research topics, ask questions, collect and analyze information (İsmail and Cevat, 2018).

Poster presentation (PP) is also one of the cooperative type AL teaching techniques. For creating posters, the students are not only required to gain the information about a specific topic, but also to analyze the information and disseminate among the others. Use of PP technique offers opportunity for students to be creative in delivering the information and also receiving feedback from their peers and faculties.

The students are given a list of possible topics pertaining to their course material students and they are required to complete a group poster presentation. Normally, three to five students who select the same topic may work together, as a group, to develop the poster and present it. The students are given verbal as well as written guidelines with evaluation rubric well before conducting the PP activity. The students are required to display their posters by posting them on the classroom walls and give a presentation before the evaluators. The teacher plays the role of a facilitator and evaluator. The grading rubric outlines criteria pertaining to content, appearance, and other requirements. The evaluation rubric is provided to students to ensure that they understand expectations of the poster presentation activity. Once posters are submitted, the teacher uses the rubric for evaluation and to provide feedback to students.

The various benefits of implementing the poster presentation technique in the teaching learning process is that it promotes critical thinking, collaboration, communication, and the use of technology for disseminating the information (Beverly et al., 2011). Further, the abilities of students viz., information management abilities, use of the internet as a source of information, ability to summarize the information from a scientific paper in a clear and simple way, ability to research literature using search engines which would be useful in an academic setting for finding and accessing articles, such as the Google Scholar. According to a study by Bahloul Amel (2014) and Ozturk (2017), a poster presentation is interesting because it has visual and verbal elements (Noraini et. al, 2022).

II. METHODOLOGY ADOPTED IN IMPLEMENTING GALLERY WALK AND POSTER PRESENTATION

A. Use of Traditional Teaching Method

In academic year 2021-22 (semester 1), the topic 'Surveying' of the course 'Basics of Civil Engineering' was taught to the students using the traditional method. No groups of the students were formed to discuss the various concepts of the 'surveying'. The 'lecture method' was used for delivering the content of the topic. Students were given few problems based on the topic for solving them in the form of home assignment.

B. Implementation of Gallery Walk Technique

The Gallery walk technique was conducted for the entire class of and total 28 students had participated in the activity. Total six (6) questions were framed and written on the drawing sheets. The drawing sheets were hung on the walls. All the students were divided into seven (7) groups each group consisting of 4 students. The students were grouped in such a way that they get divided into diverse groups. The students from the entire class were assigned numbers from 1 to 4 and then the individual students who had been assigned number '1' were asked to form their first group. Similarly, the students with number '2', '3' and '4' were asked to form second, third and fourth group and accordingly all the 28 students were divided into 7 groups each consisting of 4 students. The students were given instructions prior to the conduct of the gallery walk.

As per the procedure outlined in earlier section, the students were asked to rotate themselves to visit the various stations for 5-6 minutes duration and write the answers to the questions displayed on drawing sheets. If the questions are answered by previous group students, the students were asked to correct such answers or strengthen these answers.

At the end all the sheets were compiled and students' queries were addressed. Fig.4 shows that the student groups are writing the answers to the questions placed at different stations. Fig.5 shows that the student groups have shifted to new stations.

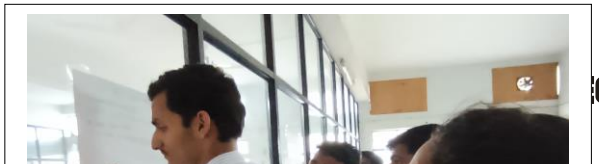

Fig.5 Student groups shifted to new stations

C. Implementation of poster presentations activity

A poster presentation activity was conducted on the topic 'Infrastructure (Unit 6)' of the course 'Basics of Civil Engineering' for the entire class of 52 students. The students were initially provided a list of topics by sharing it on Google drive and were allowed to choose the topic as per their interest. All the 52 students were divided into teams or groups based on their topic of interest for poster preparation. The posters were expected to be prepared and presented by each group consisting of two to three students. All the guidelines for the preparation of posters, the evaluation process was provided to the students well in advance.

The poster presentation activity was started by welcoming and introducing the appointed evaluators from the department of Civil Engineering of the institute. The evaluators were provided with the guidelines for evaluating the students' performance in poster presentation as per the points given below:

i. Quality of poster prepared for displaying required technical information of the topic (information, images, graphs, bar charts, pie charts, etc.)
ii. Organization of the information on the poster
iii. Communication skills with body language
iv. Homogeneity of group and effective team work
v. Ability of the group members to answer the technical questions

The evaluators started the evaluation process by visiting the places where the posters were fixed. The evaluation of each group was done by the evaluators based on the evaluation guidelines.

All the students were instructed to visit the posters prepared by each group of students and get enriched by the information on the topics presented by them in their poster after the evaluation process is over.

III. EVALUATION OF STUDENTS IN END SEMESTER EXAMINATIONS

The performance of students after implementation of Gallery Walk (GW), and Poster Presentation (PP) activities was evaluated through ESE conducted in the academic years 2021-22 and 2022-23 respectively by calculating the average marks (and percentage) obtained by students. The ESE of the course 'Basics of Civil Engineering' was conducted for 100 marks and out of the total six questions, question no.5 and question no.6 each for 20 marks were based on the topics taught by 'GW' and 'PP' respectively. The questions 5 and 6 were mapped with course outcome CO4 and CO5 of the course.

As per the institute's guidelines, it is mandatory to set the question paper of ESE for total six questions having a weightage of 60% for the first four questions (i.e., Question 1 to 4), and 40% for questions 5 and 6 respectively. Further, Unit Test 1 is based on the chapter or unit no. 1 and 2, Unit Test 2 is based chapter or unit no.3 and 4 and the ESE is based on the entire syllabus content (i.e., unit no. 1 to 6), but with specific weightages as per institute's guidelines. The syllabus content considered for setting the question paper for ESE covers unit 5 (Surveying) and unit 6 (Infrastructure) which have little higher weightage (60%). Further, the topics covered under unit 5 and 6 require more practice as are difficult for conceptual understanding. Hence, these units (i.e., unit 5 and 6) were considered for teaching using the technique under consideration.

IV. CO ATTAINMENT PROCESS

In this paper, only direct CO attainment through ESE is considered for the calculations and comparison. The process of determining the CO attainment is briefly explained in the following steps:

A. Gathering data or marks from assessment tools (i.e., ESE, in the present case)

The process of data collection from different assessment tools and its analysis is necessary to arrive at CO attainment levels. In OBE, different assessment tools are used, however, in the present case direct assessment by ESE is only considered. The marks obtained by individual student in ESE for every question (and sub-questions) are tabulated along with the COs mapped by each question.

B. Setting the Threshold value for CO

The 'Threshold value' is the percentage marks set for CO attainment calculations. For setting up the threshold value, the average marks of the last three examinations are taken into consideration. In the present case, the 'Threshold value' or set target for the determining CO attainment is considered as 57%. This indicate that the students who score above 57% marks in a question are said to have achieved the CO mapped for that question.

C. Determining the CO attainment using the formula

The percentage CO attainment is calculated as per the formula given below:

$$CO\ Attainment\ (\%) = \frac{No.of\ students\ scoring\ set\ threshold\ or\ above}{Total\ No.of\ students\ appeared}\ X\ 100$$

The average marks and percentage marks obtained by students in the questions 5 and 6 of ESE conducted in 2021-22 and 2022-23 are tabulated in Table 1.

TABLE I

MARKS OF STUDENTS OBTAINED IN ESE AND CO ATTAINMENTS

Class: F.Y.B.Tech., Course: Basics of Civil Engineering						
Academic Year & Sem.	2021-22 Sem. I	2021-22 Sem. I	2021-22 Sem. II	2021-22 Sem. II	2022-23 Sem. I	2022-23 Sem. II
Unit or Ch. No. & Title	5 (Surveying)	6 (Infrastructure)	1 (Building Compo.)	6 (Infrastructure)	5(Surveying)	6(Infrastructure)
Que. No.	5	6	1	6	5	6
Marks of Que.	20	20	15	20	20	20
Threshold Marks (TM)-57%	11.4	11.4	8.55	11.4	11.4	11.4
Rounded TM (~)	11	11	9	11	11	11
No. of students scoring ≥ TM	4	14	23	25	10	23
CO	CO5	CO6	CO1	CO6	CO5	CO6
1	3	9	11	15	0	9
2	17	7	6	12	8	12
3	0	2	15	18	4	7
4	0	0	11	16	12	8
5	2	16	13	15	9	7
6	0	0	11	13	9	6
7	10	15	7	9	6	7
8	1	13	2	13	11	8
9	1	15	13	12	9	11
10	0	0	8	8	12	10
11	7	16	8	15	7	13
12	11	16	9	9	9	14
13	0	17	0	6	14	9
14	7	3	14	18	7	10
15	0	13	0	7	5	14
16	0	3	4	11	10	4
17	0	2	10	12	7	13
18	12	14	9	0	12	6
19	4	6	4	13	10	9
20	0	13	12	0	12	9
21	0	0	5	10	2	13
22	12	11	10	14	8	15
23	0	7	7	16	12	10
24	7	9	12	17	4	15
25	8	11	10	8	15	9
26	0	6	5	9	6	4
27	0	10	11	17	14	12
28	4	11	10	5	7	12
29	0	9	3	0	16	10
30	1	11	9	18	-	11
31	1	8	11	17	-	8
32	2	7	5	8	-	6
33	0	2	6	0	-	12
34	-	-	7	4	-	6
35	-	-	0	3	-	6
36	-	-	14	12	-	8
37	-	-	4	10	-	15
38	-	-	12	17	-	14
39	-	-	4	5	-	8
40	-	-	8	13	-	9
41	-	-	3	10	-	12
42	-	-	9	9	-	12
43	-	-	7	14	-	12
44	-	-	13	17	-	13
45	-	-	3	15	-	14
46	-	-	-	-	-	12
47	-	-	-	-	-	10
48	-	-	-	-	-	8
49	-	-	-	-	-	12
50	-	-	-	-	-	9
51	-	-	-	-	-	10
52	-	-	-	-	-	11
Tot. Marks	110	282	355	490	257	524
Threshold Marks (TM)@57%	11.4	11.4	8.55	11.4	11.4	11.4
Rounded marks	11	11	9	11	11	11
No. of students attempting que.	33	33	45	45	29	52
No. of students =>TM	4	14	23	25	10	23
% CO Attainment	12.12	42.42	51.11	55.56	34.48	44.23
Technique Implemented	TRAD	PP	GW	PP	GW	PP

The CO attainments calculations are as given below:

1) Avg. CO Attainment implementing PP
   = (42.42+55.56+44.23)/3 = 47.40%
2) Avg. CO Attainment implementing GW
   = (51.11+34.48+85.59)/3= 42.80%
3) Avg. CO Attainment implementing GW&PP
   = (47.40+42.80)/2 = 45.10%
4) Avg. CO Attainment implementing TRAD= 12.12%

V. Results and Discussions

From the results of average CO attainment of students in the ESE (Table. 1), it is seen that the performance of students' gets improved by implementing the cooperative learning techniques viz., 'GW' and 'PP' over 'TRAD' teaching method. The percentage CO attainment by implementing active learning techniques (GW and PP) is found to be more by approximately 3.75 times the percentage CO attainment of 'TRAD' method. However, a little increase in the percentage CO (~4.60%) is found by implementing the 'PP' technique when compared with the percentage CO attainment by implementing GW technique. Though, the students' performance in the ESE gets improved using 'PP' technique, this improvement is not substantial. The improvement in the performance of students is graphically illustrated in Fig.6.

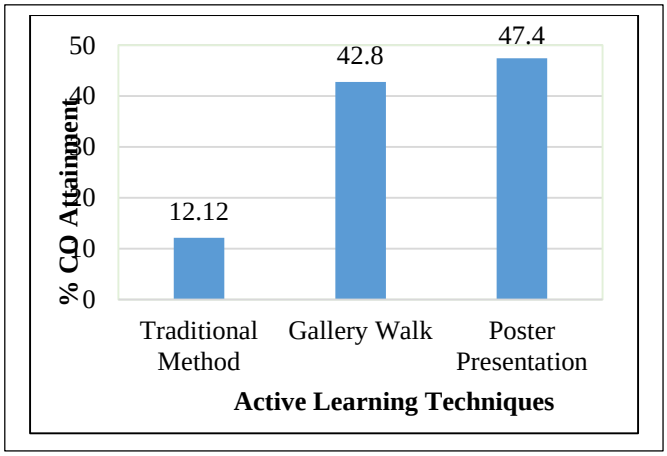

Fig. 6: Students Performance in ESE using different Teaching Learning Methods

VI. Conclusions

From the study, following conclusions can be drawn:

1. Performance of students in the ESE gets improved by implementing both the cooperative learning techniques namely 'GW' and 'PP' by approximately 3.75-fold over 'TRAD' teaching method.
2. The implementation of 'PP' technique improves students' performance by approximately 4.6% over 'GW' Technique, however this is not a significant improvement.
3. Implementing 'GW' technique resulted in boosting the confidence of students, as they could interact with other students in a friendly and supportive way while moving throughout the classroom. However, implementing 'PP' technique not only improved the students' performance in the ESE but it also improved students' research and communication skills and encouraged them to get actively engaged. Thus, it can be concluded that, 'PP' technique can be preferred as an alternative to 'GW' technique.

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REFERENCES

Beverly, S. Dawn, M. G., and Cathy, H. A. (2011). Poster Presentations as a Teaching Strategy in Web-Based Courses. *Nursing Education Perspectives*, 32(3), 198-199.

Borkar, P. (2021). What is Outcome-Based Education? OBE Vs Traditional Education System, Microsoft Accelerating Education, accessed 30 August 2023 (https://www.iitms.co.in/blog/outcome-based-education-system.html).

İsmail, C. and Cevat, E. (2018). The Effect of Teaching Activities Done by Using Activity Based Posters on the Students' Academic Achievements, Retention Levels in Their Learning. *Universal Journal of Educational Research*, 6(4): 585-597, DOI:10.13189/ujer.2018.060402

Keyser, M.W. (2000). Active learning and cooperative learning: Understanding the difference and using both styles effectively, Accessed on 30 August 2023, (https://bitly.ws/Ty5k), 1-18. DOI:10.1016/S0734-3310(00)00022-7

Khalid, A., Muhamad, S., Asmaa, A., and Wafa, J. (2018). The Impact of Using the Lecture Method on Teaching English at University, *European Journal of Education Studies*, 4(5), 285-302. DOI:10.5281/zenodo.123887.

Namaziandost, E., Esfahani, F. R., Nasri, M., Mirshekaran, R. (2018). The Effect of Gallery Walk Technique on Pre-intermediate EFL Learners' Speaking Skill, accessed on 30 August 2023, (https://bitly.ws/Ty7j) DOI:10.32038/ltrq.2018.08.01

Noraini, I., Nor, I. N., Abu, B., Muhammad, D.A.I.E, and Muhammad A.F.M.R. (2022). Academic poster competition: a new approach in teaching and learning strategy for introduction to human development course. PPT National Virtual Innovation Competition 2022 (PPTNVIC '22), Empowering Students Towards Educational Innovation, 44-47.

Rao, N. J. (2020). Outcome-based Education: An Outline. *Higher Education for the Future*, 7(1), 5–21. DOI: 10.1177/2347631119886418

Ravindran, D. and Lenin, N. (2016). Adoption of Outcome Based Education in Engineering Education during

Transition Stage. Conference paper, accessed on 30 August 2016, (https://bitly.ws/TxU3)

Shuchi (2017). Conventional Versus Modern: Role of Information Technology in Improving Teaching Pedagogies, *International E-Journal of Advances in Social Sciences*, 3(8), 496-501. DOI:http://ijasos.ocerintjournals.org/tr/download/article-file/339255.

Starting Point-Teaching Entry Level Geoscience (2023). *Starting Point-Teaching Entry Level Geoscience Website*. What is Gallery Walk? accessed on 30 August 2023, (https://serc.carleton.edu/8734).

Wadhwa, S., Barlow, A. and Jadeja, S. (2015). Activity Based Learning: Overcoming problems in implementing OBE in Engineering Education during transition phase, 43rd Annual SEFI Conference, Orléans, France, 1-9.

Wahyuni, N., Sudarsono, S., Sada, C. (2022). Using Gallery Walk Strategy to Improve Students Participation in Speaking Activities, *Journal of English as a Foreign Language Education*, 3(1) 2022 (JEFLE) E-ISSN 2775-3883, 1-8

Wang, Y. (2022). A Comparative Study on the Effectiveness of Traditional and Modern Teaching Method. *Proceedings of the 2022th International Conference on Humanities Education and Social Sciences (ICHESS 2022)*, 270-277. DOI: https://doi.org/10.2991/978-2-494069-89-3_32