

Enriching life-long learning Skills of Students by Poster Development and Presentation (PDP) Approach

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Abstract— In recent years' students are very reluctant to read books for studying for any course. They are preferring only teachers' notes or PowerPoint slides and mobile apps for exam study. Any type of information or study material is easily available on various networking sites. This can lead to poor interest and less engagement of students in the classroom teaching learning process. Also, in class activities are not fulfilling the expected level of learning of students, especially in the conceptual courses. So students need an activity based learning approach in the classroom. Nowadays most of the teachers in engineering institutions face these challenges. Hence, to utilize the capabilities of students, make them aware of course related books and achieve expected level of learning of students, a poster presentation module was implemented. In this practice paper, implementation of poster development and presentation (PDP) to improve learning of course fluid mechanics and machineries is detailed. This PDP approach empowers the student in life-long learning skills.

Keywords— Poster development and presentation, assessment, book reading, life-long learning.

JEET Category— Research Paper

Poster presentations are commonly used for assessment in the all disciplines of education, this is an innovative approach of assessment in disciplines such as business, law, and the humanities. Posters have the ability to demonstrate reflection in learning and are an excellent demonstration of experiential learning and assessing authentically.

An educational poster is a tool that enables visualization in the classroom to foster student learning. A great example is an educational poster in the format of an infographic. An infographic is a collection of imagery, charts, and minimal text that gives an easy-to-understand overview of a topic.

The main function of a poster is to capture a moving audience with a message. When designing a poster, plan its design carefully. Within a short amount of time posters will attract audience and hold attention.

The best advantage of poster making is that it facilitates team work and understanding along with facilitating creative thinking. It provides students with an opportunity to learn by doing, in turn strengthening the learning.

The basic purpose of this activity that students can synthesize information visually at a glance on one page. Poster should be self-demonstrated so anyone can understand the concept. The prepared poster can help student in the exam study. The poster will present the individual learning of students.

The purpose of these activities is to get students out of being passive audience and observers and to keep the student into the learning-teaching phenomenon in person. But it is not only to participate simply in the learning process for the learners but also to encourage them to use their mental abilities, to think themselves, to comment on learned topics, and to make relevant decisions in the learning process. The student is actively involved in the learning process, directs his / her own learning, uses high-thinking and decision-making skills, and engages in cooperation with friends.

Posters include original studies that the students perform on a specific topic with their friends in the classroom. Thus, an authentic learning environment is created in the classroom. In such an environment, students involve in their own activity and they are also in an active process. Therefore; the students learn the knowledge permanently by keeping their learning alive on their own. Thus, the students use library resources effectively, develop critical thinking, group work and presentation skills.

Individual presentations improve the validity of an assessment as it is easier to gauge the performance of students individually. As Dunn et al. point out "an assessment task is considered to be valid if it permits a student's performance, on what has actually been taught, to be measured: a task would be valid if it measures what the teacher intended it to measure." Individual assessments are necessary to evaluate the efficacy of a course as well as the progress of students enrolled in the course.

I. MOTIVATION OF ACTIVITY

In this paper, the authors have introduced an assessment method that motivates students, encourages them to relate Fluid Mechanics and Machineries course with other fields. This paper describes an innovative approach of the poster presentation to these challenges that involve a mixture of traditional and modern assessments. Creating and presenting

posters requires students to develop and use the vital skills of enquiry, critical analysis, and dissemination of findings. This paper describes the formative use of poster presentation for the second year undergraduate engineering students of one of the very reputed engineering colleges situated in urban parts of Western Maharashtra, India. The authors then present their experiences of utilizing the poster presentation as a formative assessment method. At the early developmental stage of their professional studies, poster presentation can be as successful as an assessment strategy. It can be an innovative and engaging experience for students.

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II. OBJECTIVES OF PDP ACTIVITY

The basic purpose of this activity that students can synthesize information visually at a glance on one page. Poster should be self-demonstrated so anyone can understand the concept. The prepared poster can help student in the exam study. The poster will present the individual learning of students.

Educational assessment is the systematic process of documenting and using empirical data on the knowledge, skills, attitudes and beliefs of students. Assessment helps in the improvement of the learning. Learning is a continuous process and it should be preserved while assessing students. Every assessment method must have some well-defined objectives which can be measured using some performance indicators. Objectives of this poster development and presentation activity was cleared to all students before implementing it in the class. Author has very clear intention that every student of his/ her class explore learning into society at the end of the course. The authors have designed the formative assessment through Poster Development and Presentation (PDP) keeping the following main objectives in mind.

- To create interest of Fluid Mechanics and Turbo-machineries in the students not only passing performance in overall assessments.
- To relate conceptual part of learning with daily-life applications.
- To motivate students to adopt modern learning skills.
- To encourage students to develop lifelong learning skills like curiosity, presentation, punctuality etc.
- To inculcate the habit of exploring knowledge and self-learning ability.
- To aware the students to explore Fluid Mechanics principles beyond the classroom.

III. METHODOLOGY

To bring in the feature of continuous assessment in the curriculum, the assessment of students at the reputed engineering institute of western Maharashtra has been divided

into several assessment heads. Students have to successfully complete these in-semester assessments before appearing for the final exam at the end of the semester. There is 20 marks for In Semester Assessment with 02 unit tests for 30 marks. That total In Semester Exam covers 50 marks. Students have to pass in In Semester Exams (ISE) with at least 20 marks out of total 50 marks. Faculty, teaching the particular course, has the freedom to choose any assessment tool and method to conduct In Semester Assessment for their course. This In Semester Assessment component contributes 20% to the overall grading of that course of the students. For the Fluid Mechanics and Machineries course, authors have used poster presentation as a tool for the In Semester Assessment component. Henceforth this assessment will be referred as PDP (Poster Development and Presentation). The authors have planned and executed the activity in a structured and systematic way. All the steps are elaborated on below.

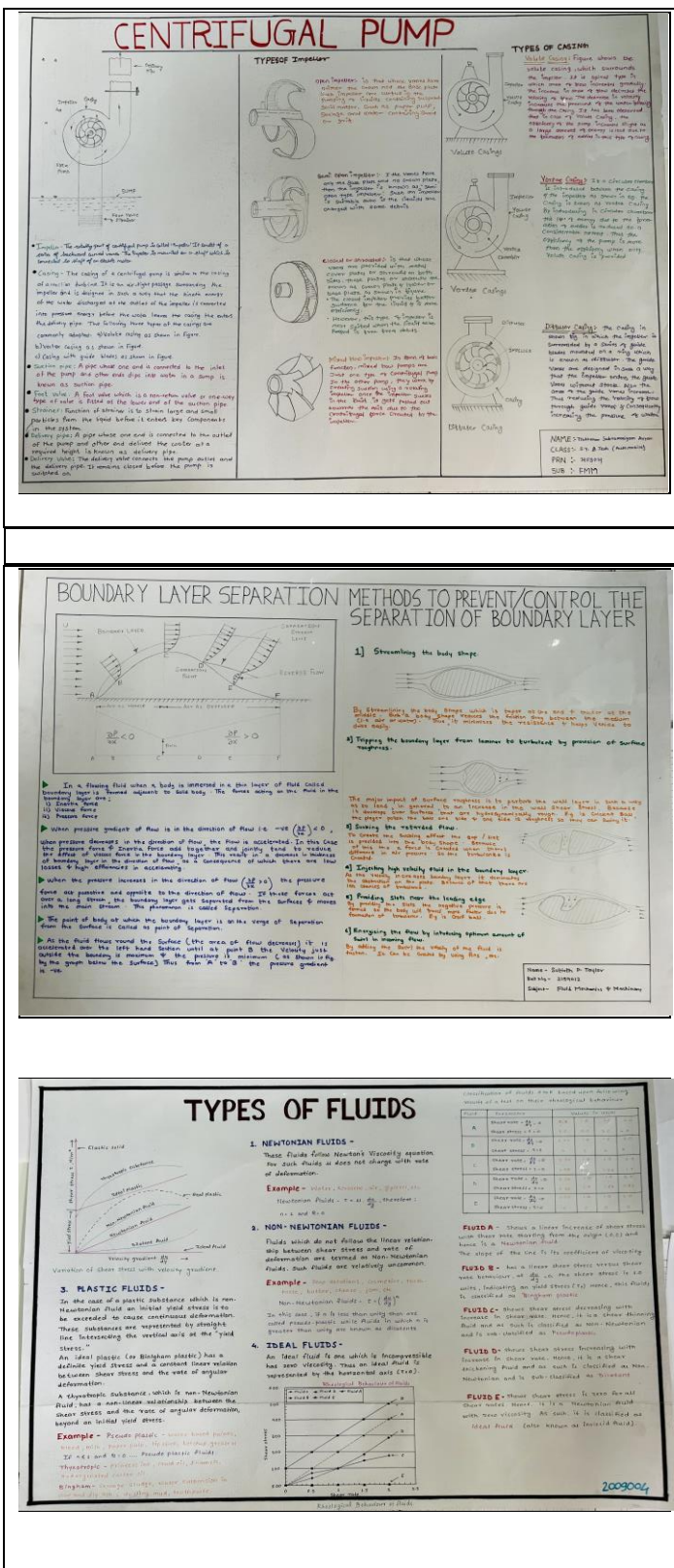
The author was implemented this activity in 10 weeks. Author made plan of 10 weeks for students to complete this activity. Plan of activity for students was used by author. This is the activity where every students know about what they have to be learned in Fluid Mechanics and Machineries subject. Also what they have to do in whole semester.

- Week 01: Topic identification- This the first step where students search the topics from content of course and submit the topics which finds relevant to the course content. Here as a teacher’s role is very important to take responses of students.
- Week 02: Topic allotment- In this step teacher asking students to submit their preferences of interest of topics. Finding out the number students preferred same topics, then ask that respective students to change topics in between them by mutual understanding and ask to submit different topic by each and individual student. After finalizing this issue teacher allot them individual topics.
- Week 03: Data collection- In this step student has to collect the information related to topic allotted. To collect data, students can use different resources such as internet, asking doubts to teacher, books and help of friends. Students may use central library facility where more than 10 to 15 books kept for reading on table of same course.
- Week 04: Data collection- In this week also students can search more information about topic allotted. At the end of this week teacher ask students to come up with individual sample layout of poster on paper in next week.
- Week 05: Sample layout preparation and suggestions from peers and course teacher- In this week every individual would come up with individual sample layout on paper. Discuss or shown his/ her layout with teammates and teacher. After suggestions from peers and teachers in group discussion, students knows the proper solution or direction and start work accordingly.

- **Week 06: Data collection as per suggestions**– As per suggestions or correction received students need to change or correct the information as well as layout. At their individual level student search necessary information as per requirement of poster development.
- **Week 07: Poster development (Stage-I)** – Students start to draw draft posters. In first stage students fails to accommodate all relevant information in one page. At this time teacher's role is important to check design aspects of poster. Also to check student covers all study information in the poster.
- **Week 08: Suggestions or corrections from course teacher** – In this stage students' needs to correct all the corrections and do as per suggestions receives in class discussion.
- **Week 09: Poster development (Stage-II)** - In this stage student has to complete his or her poster and get it checked from teacher.
- **Week 10: Poster presentation in class**- From this week students presents their poster in class. Here teacher as well as peers assess him or her.

IV. ASSESSMENT OF ACTIVITY

After assigning topics, students were given a time period of 10 weeks to prepare the poster and present it in the classroom in front of the whole class. They were encouraged to refer to as many online/offline resources as possible. These resources included different websites, books, journal papers, YouTube videos, etc. During these 10 weeks students were encouraged to discuss with peers, interact with seniors and take guidance from their teachers. After going through the available literature survey, students were expected to analyze and evaluate available information, synthesize ideas and creatively demonstrate their understanding of the assigned topic in the form of a poster. Each one of them was expected to come up with some different information in their posters. This helped in imbibing the peer learning ability in students and it also gave them an opportunity to use their analytical skills to organize and present the information in the form of an A3 size poster with their choice of design. All students had come up with beautiful posters. Some of the posters are shown in below figure 1.



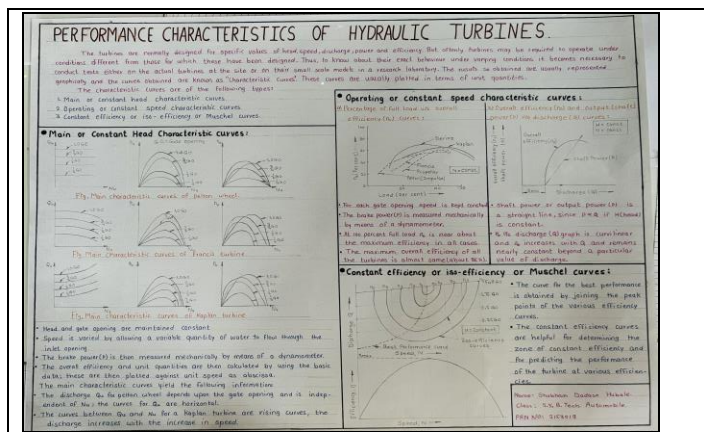


Fig 1: Students' posters for PDP Activity

Assessment of the posters was done with the help of a rubrics. Rubrics that measured the students' performance and work done during this activity. Student's performance was on criteria like the relevance of the information provided with the assigned topic, utilization of content and space in the poster, creativity, plagiarism, punctuality and references given. Students were pre-informed about all the assessment criteria and they were encouraged to understand and follow the requirements of each criterion to perform well in their evaluation. This helped in making the assessment process consistent and transparent.

Teacher encouraged students to present the process of their poster making and key findings related to their topic during a respective lectures. This helped in transmission of ideas and made all students aware of other topics and the information related to assigned topics. The poster presentation helped students to connect their imagination skills with their creativity skills.

Rubrics of assessment is mentioned in below figure 2.

In Semester Assessment Rubrics Sheet							
Activity: Poster Development and Presentation (PDP)							
Course & Course Code: Fluid Mechanics and Machinery (MA204)				Academic Year: 2021-22			
Class: S. Y. B. Tech. Automobile				Semester: IV			
Name of the Student: _____				Roll No.: _____			
Parameter/ Criteria	Weightage	Level 1 (0 Marks) (0.00)	Level 2 (1 Marks) (0.02)	Level 3 (2 Marks) (0.04)	Level 4 (3 Marks) (0.06)	Level 5 (4 Marks) (0.08)	Score
Data Collection (P01)	04	No data collection	Irrelevant data collection	30% data collection	70% data collection	Proper data collection	
Sample Layout Preparation (P02)	04	No layout preparation	Worst layout preparation	50% preparation	100% layout preparation but no creative approach	Creativity shown in layout preparation	
Peers and Teachers Suggestions (P03)	04	Not started activity	More than 10 suggestions from peers as well as from teacher.	Less than 10 suggestions from peers and teacher.	Less than 5 suggestion from peers and teacher.	Appreciated by peers and teacher	
Poster Development (P04)	04	Not self-prepared or not started to draw poster.	Poor poster drawing	50% poster completion	90% poster completion	Critical thinking ability and self-motivation imparted in Poster completion	
Poster Presentation (P05)	04	Poster not presented in class.	Lacking in presentation skills	Poster presented but concepts not cleared.	Poster presented with good presentation skills.	Presentation imparting self-confidence, motivation and highly enthusiasm	
Signature of student: _____				Signature of Course Teacher: _____			

Fig 2: Assessment Rubrics of PDP Activity

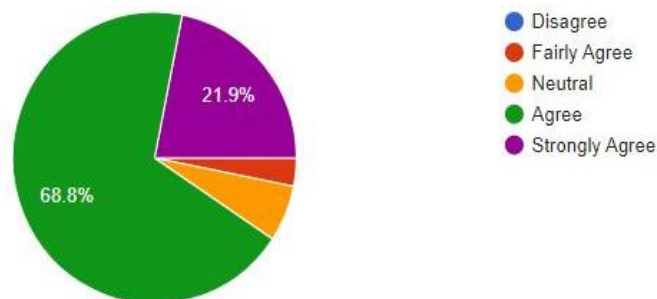
V. RESULT AND FINDINGS

The student's responses were collected based on three different criteria

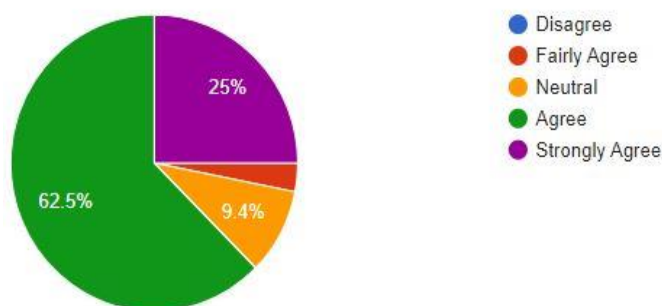
- 1) Learning based student's response.
- 2) Sources of information collected.
- 3) Course outcomes feedback

Responses of the students on their learning skills were collected on different parameters as interesting task, challenging task, knowledge improving task and helping to prepare for End Semester Exam (ESE). Students were asked to submit their learning abilities based on five different scales such as strongly agree, agree, neutral, fairly agree and disagree. Students learning responses mentioned in below figure 3.

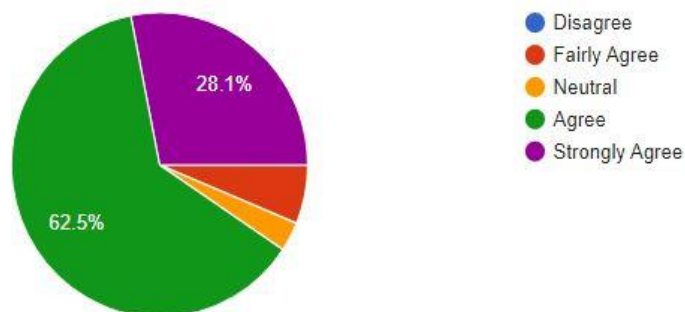
Q.1: Is the Poster Development and Presentation activity interesting?



Q.2: Is the Poster Development and Presentation activity challenging?



Q.3: Is the Poster Development and Presentation activity knowledge improving?



Q.4: Is the Poster Development and Presentation activity help to prepare End Semester Exam (ESE)?

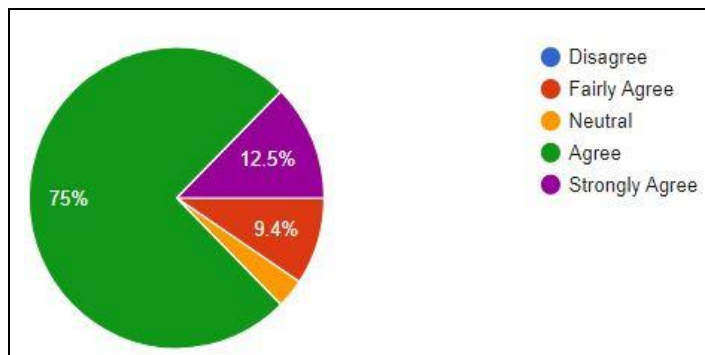


Fig 3: Learning based student's responses

From the feedback on the first criteria observed that PDP activity created more interest in students as well as improved knowledge of students. 87.5 % of the students highly agreed that PDP helped them in End Semester Exam (ESE).

- 21.9 % of the students strongly agreed and 68.8 % of the students agreed that PDP activity is most interesting.
- 25.0 % of the students strongly agreed and 62.5 % of students agreed that PDP activity is most challenging.
- 28.1 % of the students strongly agreed and 62.5 % of the students agreed that PDP activity is more useful for knowledge improvement.
- 12.5 % of the students strongly agreed and 75.0 % of students agreed that PDP activity helped them in End Semester Exam (ESE).

The feedback taken on the Sources of Information Collected based on four major resources. Here author asked students to give their preference to resources which was mostly benefitted them.

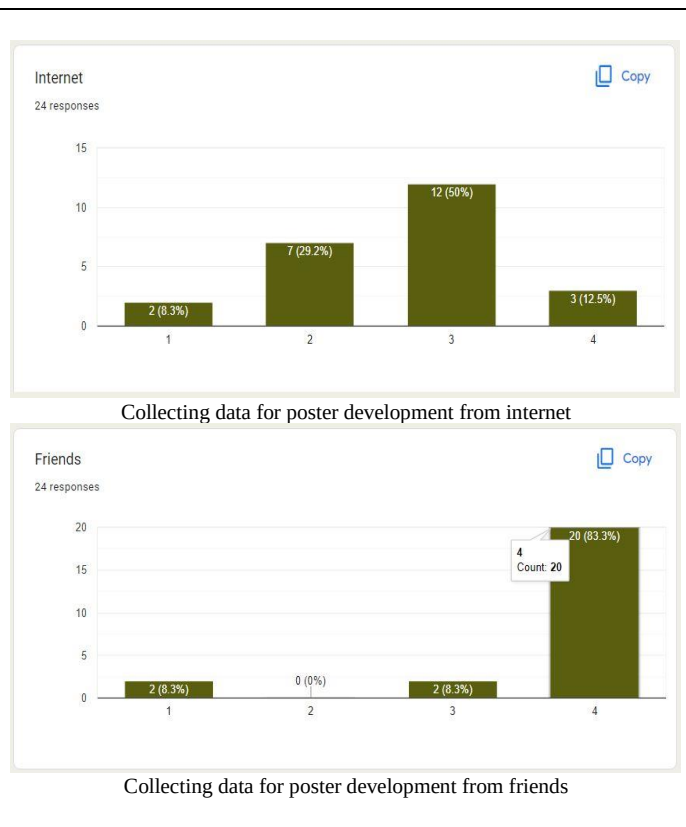
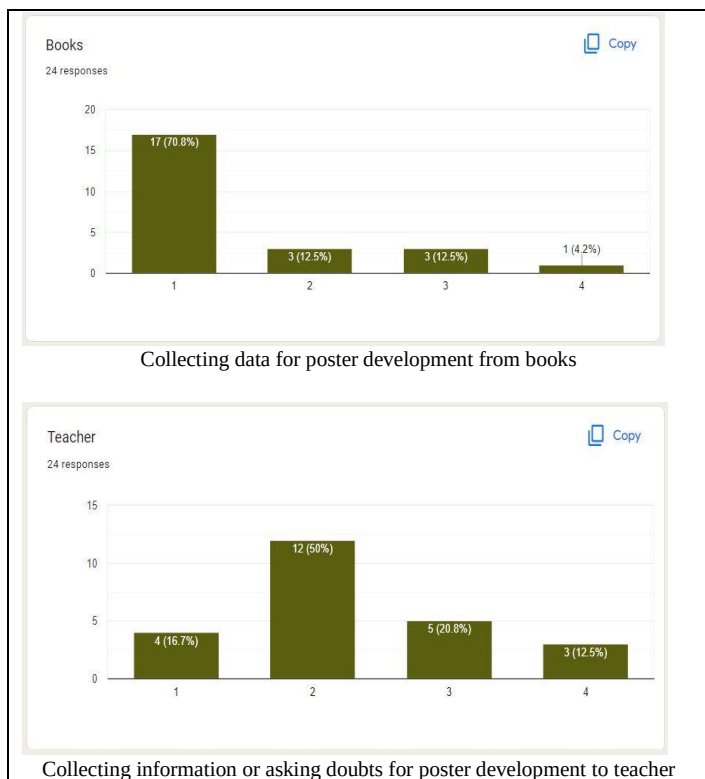
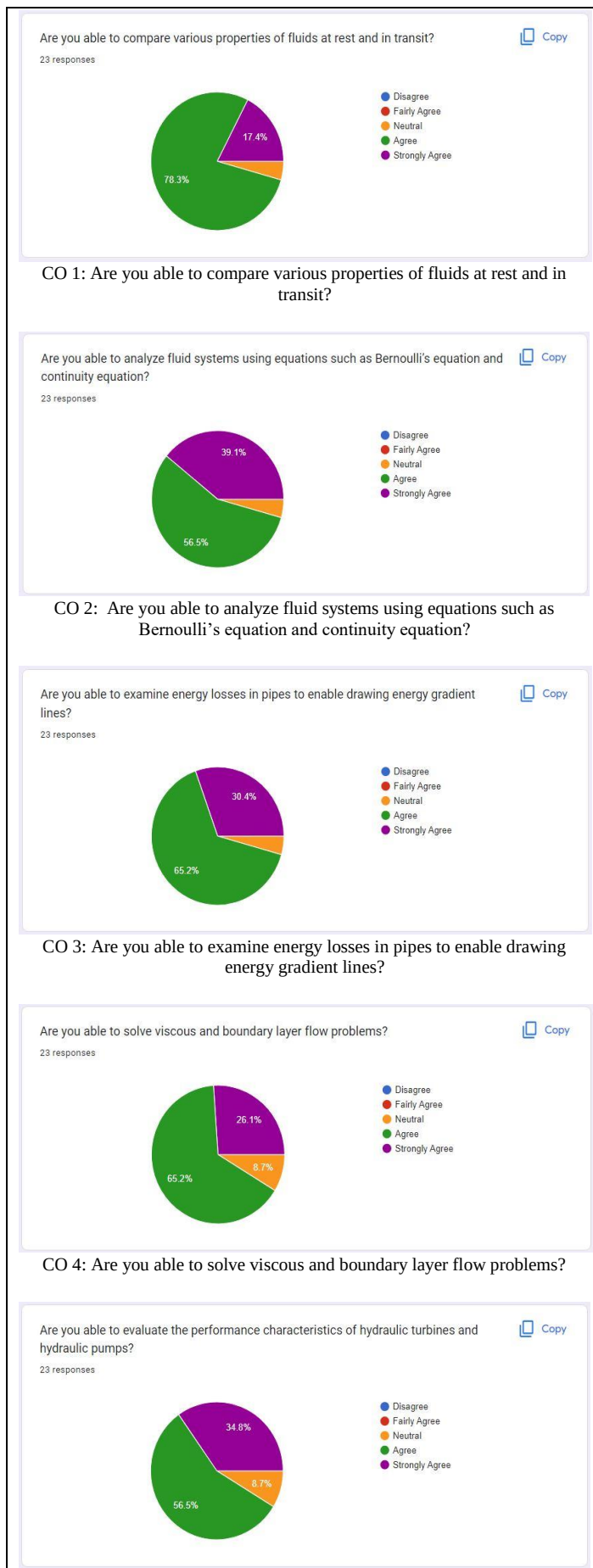


Fig 4: Preferences for resources used to collect information

The summary of findings of the second criteria labeled as Sources of Information Collected is presented below.

- 70.8 % of students given first preference to books reading as first resource which is used for PDP activity. Out of the remaining 12.5 % students given second preference to book reading as a source of information collected from teacher.
- 16.7 % of students given first preference to asking information related to the topic and clarify doubts to teacher during whole PDP activity. 50.0 % of students submitted second preference that they get benefitted by teacher during PDP activity.
- Only 8.3 % students preferred first choice to collect information from internet. 50.0 % of students given third preference for information collection from internet for this PDP activity.
- 83.3 % student's fourth preference for taking help of their friends to draw poster.

Responses on the third criteria i.e. course outcomes were received at the end of the course. Course outcomes feedback based on five scales as strongly agree, agree, neutral, fairly agree and disagree. Course outcomes feedback mentioned in below figure 5.



CO 5: Are you able to evaluate the performance characteristics of hydraulic turbines and hydraulic pumps?

Fig 5: Course End Survey

Feedback on the third criteria Course Outcomes Feedback collected at the end of course and it is presented in table below.

TABLE I
COURSE END SURVEY STATISTICS

CO	SA	A	N	FA	D
CO01	04	18	01	00	00
CO02	09	13	01	00	00
CO03	07	15	01	00	00
CO04	06	15	02	00	00
CO05	08	13	02	00	00

Abbreviations: SA – Strongly Agree; A – Agree; N – Neutral; FA – Fairly Agree; D – Disagree

Student's performance was analyzed in terms of parameter wise and learning level wise as per the rubrics designed. In this table row wise learning levels are mentioned and column wise parameters are mentioned. According to marks secured in the PDP at respective stage parameter students fall in respective levels.

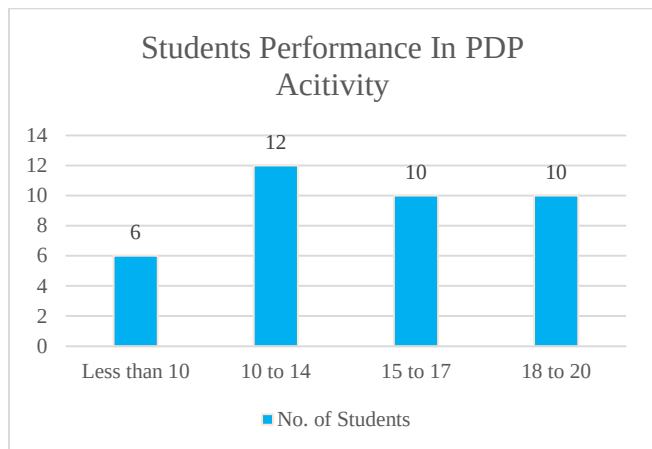
TABLE II
PARAMETER WISE & LEVEL WISE STUDENTS PERFORMANCE IN PDP

Parameter/ Level	L1	L2	L3	L4	L5
P01	00	05	08	16	09
P02	00	04	06	17	11
P03	00	04	07	15	12
P04	00	02	08	14	14
P05	00	02	08	14	14

Abbreviations: P01 – Parameter 01; P02 – Parameter 02; P03 – Parameter 03; P04 – Parameter 04; P05 – Parameter 05; L01 – Level 01; L02 – Level 02; L03 – Level 03; L04 – Level 04; L05 – Level 05.

Student's performance was measured in terms of marks secured in PDP activity, which was evaluated out of 20 marks as per the rubrics used in above figure 2.

CHART I
STUDENTS PERFORMANCE IN PDP



VI. STUDENTS PERFORMANCE IN UNIT TESTS

Performance of students was analyzed from marks secured in Unit Test- I (UT-I) and Unit Test- II (UT-II). Both Unit Tests was carried out for 25 marks.

TABLE III
STUDENTS PERFORMANCE IN UNIT TESTS

Parameters	UT-I	UT-II
Average Marks of all Students	8.41	12.51
No. of Students Pass	26	28
No. of students secured marks 10 to 20	25	24
No. of students secured marks above 20	01	04

VII. OUTCOMES OF ACTIVITY

Following are the outcomes of PDP

- It was observed from the learning based student's feedback that PDP is the more interesting and challenging tool.
- PDP It also helps students for Semester End Exams.
- PDP helps students to interact with a peers and teacher.
- This type of assessment improves creativity ability of students.
- It was results after PDP are excellent and it indicates improvement in student learning.
- Students' performance in exams is improved.

VIII. CONCLUSION AND FUTURE SCOPE

It was observed that poster helps to focus and motivate students to learn. It's an effective way to catch and hold the attention, as well as helps to maintain their interest in a conceptual course like Fluid Mechanics and Machineries. Posters are convenient for both students and teachers too, as they help them to absorb the information much faster. It was observed that more than 80% of students were used library resources (Books) for data collection for PDP activity. This PDP activity helped to more than 90 % of students in preparation of End Semester Exam. Third Criteria of response i.e. Course End survey reveals that 80% of attainment of all

CO's achieved. More than 90% students feel that PDP activity was interesting and challenging.

Some remarkable improvements are listed below.

- 1) Student's performance in terms of average marks of all students was improved by 30% in unit test-II.
- 2) Passing number of students also improved by 7%.
- 3) 04 no. of student's secured marks more than 20 in unit test-II, it was better than unit test-I by 03 numbers.

Student's feedback reveals that poster presentations helped students to work in team, overcome anxiety and gain more self-confidence while presenting. In addition to this, poster presentations improved creativity, promoted students autonomy, and inspired for their future leaning.

In spite interest of PDP in students but it requires proper planning and implementation. If similar active learning techniques used for more courses then students may be more creative.

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