Student Centered Learning - "Students Preference of Teaching Methods"

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Abstract: This paper is an attempt to analyze the student centred learning approaches in Govt. Rajiv Gandhi Institute of Technology, Kottayam, Kerala. The strategies and requirements for shifting the teacher centred learning process to the student centred learning process have been discussed. To assist this shift, a partnership centred approach can be more useful over a certain period of time. The role of the teachers in assisting the shift from the teacher centred to the student centred approach has also been discussed. The key aspects of learner centred methodology have also been mentioned. An attempt is also made to understand the students' view in this matter. A survey was conducted based on a set of questions at different years of the Govt. Engineering colleges in Kerala. The questions were designed such that they reflect the requirements of student centred learning process. This study found that students from the three years (second, third and fourth year) demand social activities to be included in the curriculum. In this study, it was also found that industrial visits are most favoured by fourth year students while projects and assignments are more favoured by second and third year students.

Keywords: Learner centred approach, teacher directed learning, learning partnership, technology education, creative problem solving.

I. INTRODUCTION

Learning is a dynamic process and there should be a balance between teacher-directed learning and student managed learning and this balance itself is a dynamic parameter. The emergence of personal ownership of learning is the hallmark of a true student. So shifting of the balance from the teacher directed learning to the student managed learning is very important as a student passes through the different years of his/her study. This is one of the challenges in technological education, especially at these times when the technology itself is changing at a very fast pace. The true balance in this process is not a critical parameter, but the direction in which this balance moves is certainly critical.[1]

A learner centred approach provides students with opportunities for creative thinking, real life problem solving and critical decision making. To develop these attributes there should be the proper use of knowledge, practice, analysis, synthesis, prediction and evaluation. When the students really involve in decision making and actions, it is an opportunity in itself for encouragement as it reflects and monitors their thinking. The traditional norms of technology education are at a stage of transformation.[2],[7].

II. OBJECTIVES OF THE STUDY

To understand the students' views in the different aspects of learner centred teaching methods (by conducting survey).

A. Shift from Teacher-Centred to Learner-Centred Approach

The traditional teacher centred method is based on a 'show and follow' style of learning. The evolution taking place in this field is transforming the subject into an individual student's ability to solve real life problems related to his field of study by integrating relevant knowledge of materials, systems and processes. Thus the present teacher centred method can be shifted to the student-centred method.

The student should be able to combine the practical (skills) and theoretical (thinking) knowledge to intervene creatively to improve quality of life. The idea is that the students should become creative problem solvers in a team as well as individually. This leads to more autonomy in studies as well as in dealing with technology matters. They should be able to look for needs, wants and opportunities and respond to them by applying their own ideas and finally coming up with useful designs, products and systems.

In this process it needs a combined application of practical skills, aesthetics, environmental and cultural issues and also a good knowledge of the industrial practices. They should also analyse the existing similar products, make comparisons and modify the designs so that it is more user friendly. This process of refinement can lead ultimately to innovations also.[3], [5]

B. Development of New Knowledge

Technological design involves application of knowledge to new and challenging situations. At many times this process can result in the development of new knowledge. Technological design requires various strategies like problem solving, visual imagination and mental reasoning. A good power of imagination will be an added advantage. Developing these abilities and strategies should be part of technological education system. Abilities like those mentioned above can be developed in students by providing them with adequate experiences in designing, testing, modelling, observing, troubleshooting and investigating.[2], [4]

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C. *The roles of the teachers*

The student centred learning can be achieved only with the help of a teaching method oriented to that goal. Students can not be expected to learn everything overnight by them selves. There are certain contradictory requirements in this aspect. There is always the necessity of teachers to demonstrate a range of methods and techniques for the students. They need to demonstrate the students the safe and proper use of hand, machine and computer skills as well as model for students a range of technological problem solving skills. These types of skills will slowly transform the student to take the ownership of his learning process. The teacher involvement at the beginning has to be more because it will make the learning curve fast for fresh students, help to avoid possible damage of costly equipments and also it will provide a competent use of the new technology or process. The involvement of the teacher differs in different degrees to different years of students in the Govt. engineering colleges in Kerala. It should be maximum at the first year and minimum at the final year. Also the traditional workshop environments improve the students' procedural abilities until he is able to apply the previously acquired skills to the technological design process. So ultimately the student should be able to acquire industrial skills as well as thinking skills.[5],[6]

III. SURVEY

A questionnaire is prepared and distributed to the students to obtain their perception on different teaching methods. Each question was given four choices, 4 = 'strongly agree', 3 = 'agree', 2 = 'disagree' and 1 = 'strongly disagree'. A title, 'questionnaire on teaching methods' is given and brief explanation is also given about certain questions as some students needed clarifications. The questionnaire contained 7 Questions listed below.

A. *Questionnaire on Learning Methods*

1. Imagination and thinking need a place in my studies
2. I like to do simple calculations without the help of a calculator
3. I think the country needs more scientists, thinkers, writers etc.
4. I like to read books outside my study subjects
5. Social activities must be included in my curriculum
6. I am satisfied with the choice of subjects presently offered in my specialization.
7. I have an overall satisfaction in the different teaching methods followed by my teachers.

The questionnaire is prepared to include Questions (eg: 1 to 5) related to the different requirements for the student-centered learning approach, such as imagination, thinking, mental arithmetic, social and cultural activities, extra reading, thinking about future needs etc. Questions 6 and 7 reflect on the student's satisfaction in the involvement of curriculum design.[2]

Also the students were asked to indicate their preference to the different teaching methods currently being practiced or may be practiced in the class room. Five teaching methods were given as listed below and the students were asked to indicate the order of their preference.

Table 1: Details of the survey

Year	Number of students	Branch of Engineering	Gender	
			Male	Female
Semester 7	30	Electronics & Communication	22	8
Semester 5	25	Electronics & Communication	20	5
Semester 3	25	Electronics & Communication	6	19
Total	**80**		**53**	**27**

B. *Teaching Methods Listed to Students for Assigning Preference*

A. White board and marker (the chalk and board) method
B. More problem solving, assignments and projects
C. Power point presentation, videos and animations
D. Industrial visits, real life problem solving etc
E. Group discussions and seminars by students

IV. THE DESCRIPTION OF THE SURVEY

The survey was conducted at Govt.Rajiv Gandhi Institute of Technology, for a total number of **80** students at different levels in the **Department of Electronics & Communication Engineering**. The details are given in *Table 1*.

V. THE RESULTS OF THE SURVEY

A. *For Semester 7 Students*

The survey was conducted for a class of **30** students and the average results are shown below. Fig.1 (a) shows the result of the survey on the questionnaire. The vertical axis shows the students' rating on a relative scale of 1 to 4. '1'indicating a strong disagreement and '4', a strong agreement.

The horizontal axis shows the different questions listed under the sub-heading of '*Questionnaire on Teaching Methods*'.

Fig.1 (b) shows the student preference to the different teaching methods. The vertical axis is on a relative scale of 1 to 5.

A value of '1' indicates the least preferred method by the student and '5', the most preferred. The horizontal axis shows the different teaching methods listed to the students, as indicated under the sub-heading, '*Teaching Methods Listed to Students for Assigning Preference*'.

B. *For Semester 5 Students*

The survey was conducted for a class of **25** students and the average results are as shown below. Fig 2(a) shows the students' rating on the questionnaire and Fig.2 (b) shows the student preference to different teaching methods. The values on the axes are same as in Fig 1(a) and Fig 1(b) respectively.

C. *For Semester 3 students*

Fig.3 (a) and (b) shows the results for the Semester 3 students. It is the average results for a class of **25** students. Fig 3(a) shows the students' rating on the questionnaire and Fig.3(b) shows the student preference to different teaching methods. The values on the axes are same as in Fig 1(a) and Fig 1(b) respectively.
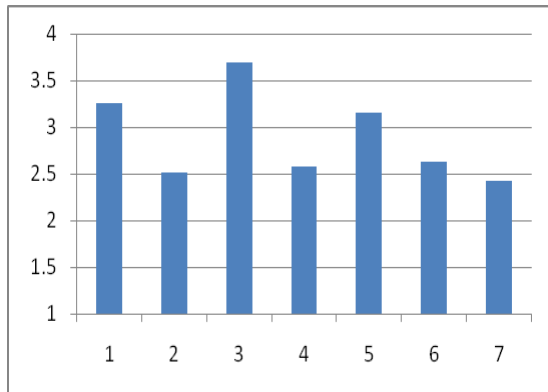
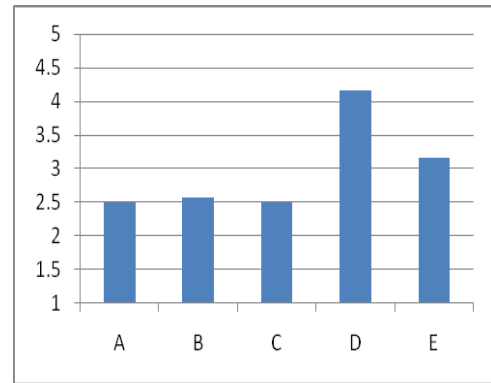Fig. 1(a) Response of Semester 7 students
to the questionnaire.

Fig. 1(b) Preference of teaching methods
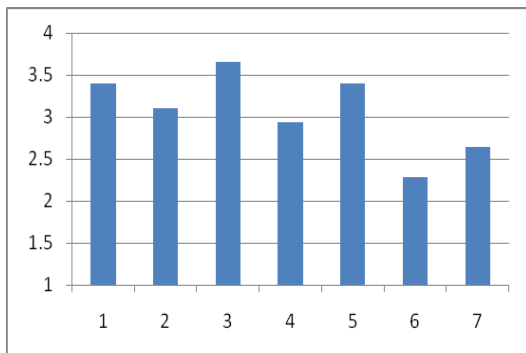By Semester 7 students.

Fig. 2(a) Response of Semester 5 students
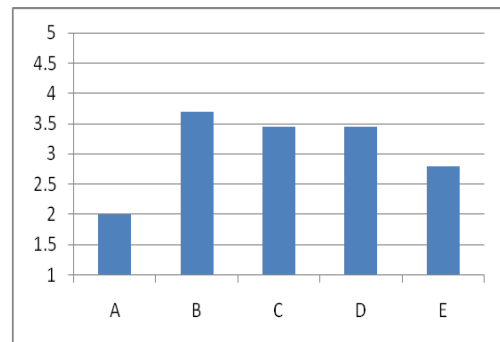to the questionnaire.

Fig. 2(b) Preference of teaching methods
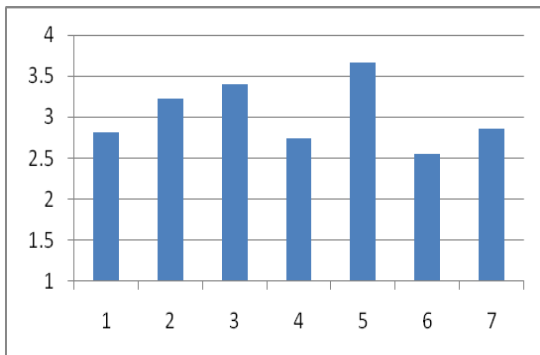by Semester 5 students.

Fig. 3(a) Response of Semester3 students
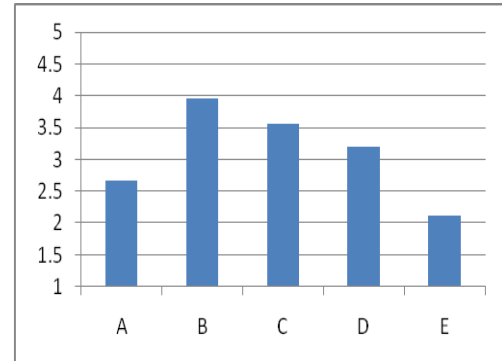to the questionnaire.

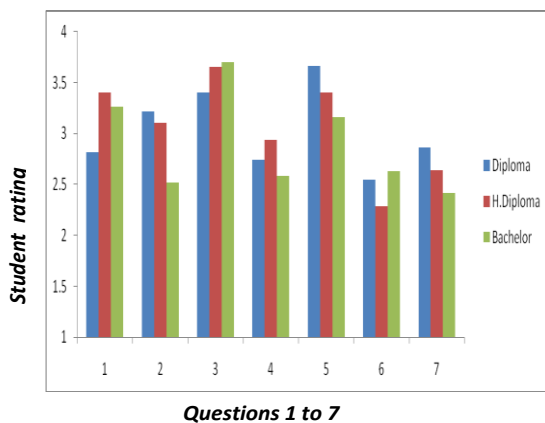Fig. 3(b) Preference of teaching methods
by Semester 3 students.
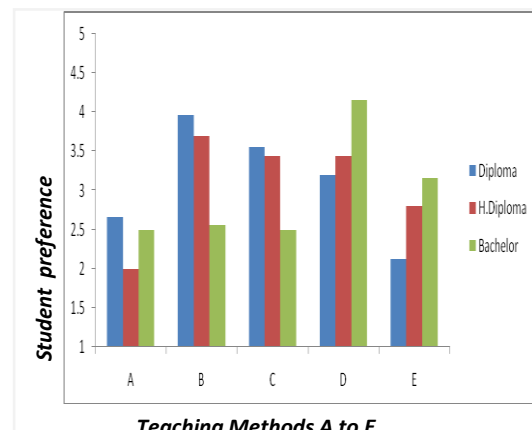

Fig. 4(a) comparative chart for the questionnaire

Fig. 4(b) comparative chart for 5
teaching methods

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VI. ANALYSIS OF THE RESULTS

The students of Semester 7 (SEM7) and Semester5 (SEM5) have a good agreement to the need of imagination and thinking (Question1) in their curriculum. Question 2 gives a very interesting result. The SEM7 students seem to have more dependency on calculators than the SEM5 and SEM3 students even for simple calculations. Students in all semesters agree almost strongly to Question3. They are aware of the future requirements for developments. The Question 4 is an item which needs certain comments here. All the students do not agree to do extra reading. This may be due to the methods followed from school classes or due to access to few books of different courses. Teachers have to put more efforts in this matter to encourage the students to acquire knowledge in different domains. Moreover all the students show a very good interest in social activities (Question 5).

Regarding the preference to the teaching methods, there are different opinions among different semesters of students. The SEM7 students have less preference to all the traditional methods like chalk and board, PPTs, assignments etc.(A,B and C). They mostly prefer method D (Industrial visits, real life problem solving). At this stage the students are either worried about the jobs or they are getting ready for the job. The SEM7 students like to know how the real work environment looks like and they need more exposure to industrial situations. They like the 'group working methods' (E) as they have confidence in team work.

For SEM5 students, method B (problem solving techniques) is the most preferred one, followed by C, D and E. They least prefer method A. This is because mathematical analysis Courses starts in semester 5. The SEM3 students also prefer method B most. For them the least preferred method is E. It seems they are not confident enough to conduct seminars of their own!

VII. DISCUSSION

Most of the prior research on student's perceptions of preferred interpersonal teaching has been conducted in western and European countries such as the Netherlands, United States, Norway, Wales and Australia, or in South east Asian Countries. No such research is known by authors that has been conducted in eastern European countries.

Of course, the question of what constitutes good teaching is rather complex because it can be approached from different angles and with various view points on teaching and learning in mind. Moreover, the response to such a question depends on the criteria against which "preferred" is being defined.[8]

VIII. CONCLUSION

The survey reveals that the students are ready for a transition from the teacher centred to the student centred approach. They have shown enough courage to take certain challenges of this transition. Still it needs a lot of support from the teacher community to make the shift possible in a smoother manner.

For curriculum reform of technology, teachers should create a learning partnership with the students. The aim of this partnership is to promote learner autonomy. If the students have control over their own learning, this partnership will favour student initiated learning activity. The traditional teaching and learning roles become blurred and the direction of change from teacher centred to student centred becomes more important for the individual student than the overall extend of any change.

In this paper, I focused the Survey only on Students of Department of Electronics & Communication Engineering, Govt. Rajiv Gandhi Institute of Technology, Kottayam. My future plan is to conduct the Survey on Students from other Departments, like Civil Engineering, Mechanical Engineering, Electrical & Electronics Engineering. Also I am planning to extend the study to the other Engineering Colleges in Kerala, so that we can get the students' perception on student-centred approach from different regions of the state.

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BIOGRAPHY

Mrs. Rezuana Bai J is a holder of Masters Degree in Control and Instrumentation from IIT Madras, India. She has 20 years of teaching experience in India and Oman. Her areas of research include control engineering, Fuzzy Logic, instrumentation etc. Currently she is working as Assistant Professor, Dept. of Electronics and Communication Engineering, Govt.RIT, Kottayam, Kerala.