Student perception of using micro-project as a teaching method

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ABSTRACT

Active learning has attracted strong advocates among faculty looking for alternatives to traditional teaching methods. Micro-project has been recently introduced as an add-on teaching method. It has been selected to be part of the curriculum to inculcate interpersonal skills. In this study, the researchers aim to investigate students' pre and post behavioral changes while learning chemistry through micro- project. This paper discusses the feedback on students' perceptions regarding the implementation and effectiveness of micro-projects. Findings show that most of the students show the positive perception of using it as a teaching method and agree to learn using the same method in the future.

Keywords: *Microproject, Active learning, Teaching learning method, Assessments, Learning outcome, Demands*

1. INTRODUCTION

Effective teaching is important because teaching is based on helping students' progress from one level to another in a more sociable interactive environment and to get the approach right to get students to be independent learners. Effectiveness does not mean being perfect or giving a wonderful performance but bringing out the best in students. A teaching method comprises the principles and methods used by teachers to enable student learning

Lecturing and demonstrating are teacher-centered teaching method. In this method, the primary role of teachers is to pass knowledge and information onto their students and students are viewed as "empty vessels" whose primary role is to passively receive information. Student learning is measured through objectively scored tests and assessments.

In Student-Centered Approach to Learning, teachers and students play an equally active. The teacher's primary role is to coach and facilitate student learning and overall comprehension of the material. Student learning is measured through both formal and informal forms of assessment, including group projects, student portfolios, and class participation. Teaching and assessments are connected; student learning is continuously measured during teacher instruction.

Inquiry-based learning is one of the student-centered learning approaches. It is based on student investigation and a hands-on project. Inquiry-based learning is a teaching method that casts a teacher as a supportive figure who provides guidance and support for students throughout their learning process. In this method, the teacher plays the role of facilitator and delegator. Student learning is loosely guided by the teacher and is focused on fostering independence, hands-on learning, and exploration.

collaboration is also student-centered learning approach which allows students to actively participate in the learning process by talking with each other and listening to others opinions. Collaboration establishes a personal connection between students and the topic of study and it helps students think in a less personally biased way. Group projects and discussions are examples of this teaching method. Teachers may employ collaboration to assess student's abilities to work as a team, leadership skills, or presentation abilities.

Microproject is one of the methods which links with collaboration approach and inquiry-based learning. It is the best example of active learning. It is also known as self-help method, something that an individual can do to improve their own skills.
A micro-project is "self-help". All micro-projects have four stages:
1. **Preparation** – analyzing families own personal situations and identifying needs in terms of activities required to improve their skills
2. **Planning** – selecting an activity that families can do to meet their needs
3. **Implementation** – doing the activity
4. **Review** – reporting on the success or problems in the activity in meeting their needs

2. METHODOLOGY

Data collection procedures

This paper reports on a survey on the use of micro-project in learning chemistry with a group of first-year Diploma students at the Department of textile technology. A total number of 56 students participated in the study. It was a heterogeneous group made up of students from different intellectual level. The projects were carried out by the students in chemistry laboratories. The department has four chemistry laboratories consisting of instruments, glass wares, and machines required for the project work. The students have allotted sixteen hours to complete the project work.

Instruments

The questionnaire for the Student Perception of Using micro- project as a Teaching Method Consisted of 37 items in six sub-sections namely experience of students before learning, teaching and learning process, students and teacher interaction, assessment and other settings work, demands made by the course unit, and learning outcomes.

All the sections are clustered by different questions in the questionnaire. In addition to the questionnaire prepared, the students were asked open-ended questions to express the ideas about learning through micro-project. Data collection and analysis to be able to evaluate the effectiveness of micro-project as a learning method, it was decided to conduct a questionnaire with the students in the class. When the questionnaire was taken, participants had completed their project in three months.

3. RESULTS AND DISCUSSIONS

The basis for the deductions in this study was the data from the questionnaire "The approach to learning and studying through micro-project". The findings presented below are about the analysis of the survey of six sub-sections from this questionnaire: Figures 1, 2, 3, 4 and 5 present the distribution of surveyed students' answers according to the first sub-section – the experience of the students before learning.
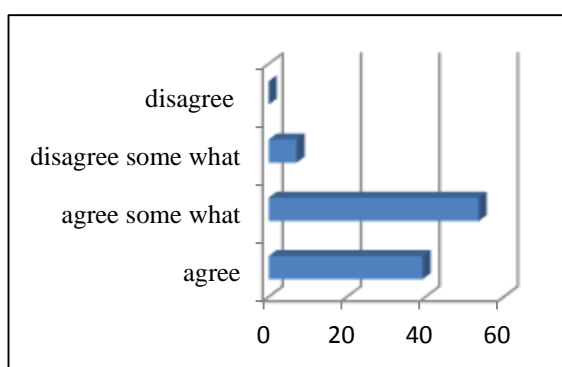

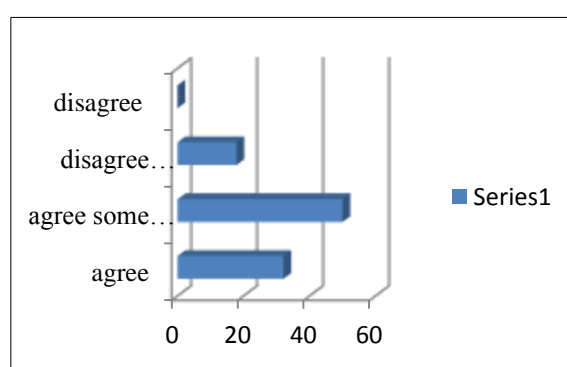**Fig. 1: In making sense of new ideas, I have often related them practical or real life.**

Fig. 2: On the whole, I've been quite systematic and to organized in my studying.
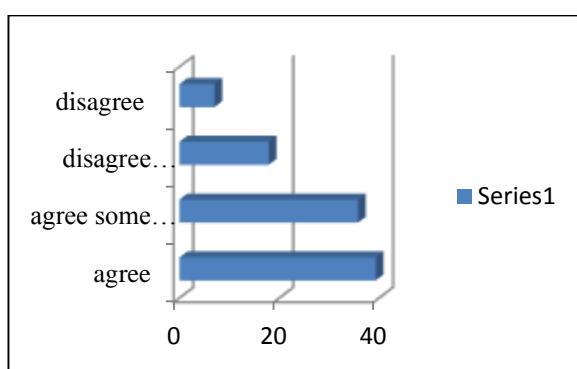

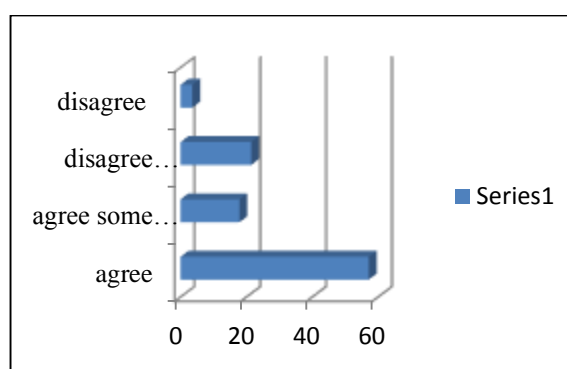**Fig. 3: I've organized my study time carefully to make the best use of it.**

Fig. 4: I've tried to find better ways of tracking down relevant information in this subject.
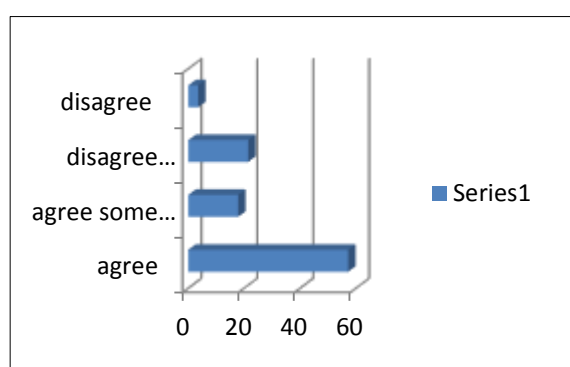

Fig. 5: If I've not understood things well enough when studying, I've tried a different approach.

As seen in figure 1, it is observed that 53% student somewhat agrees with the fact that, in making sense of new ideas, they have often related them to practical or real-life contexts.

Figure 2 demonstrates that 50% of students somewhat agreed that they were quite systematic and organized in their method of study. Figure 3 indicates that 39% of students have organized their study time carefully to make the best use of it. According to figures 4, more than 57 % of students agreed that they have tried to find better ways of tracking down relevant information on this subject. Fig. 5 indicates that 46% of students have agreed that if they have not understood things well enough when studying they have tried a different approach.

Teaching and Learning Process:
Figures 6, 7, 8, 9 and 10 present the distribution of surveyed students' answers according to the second sub-section – the experience of the students during teaching and learning process.
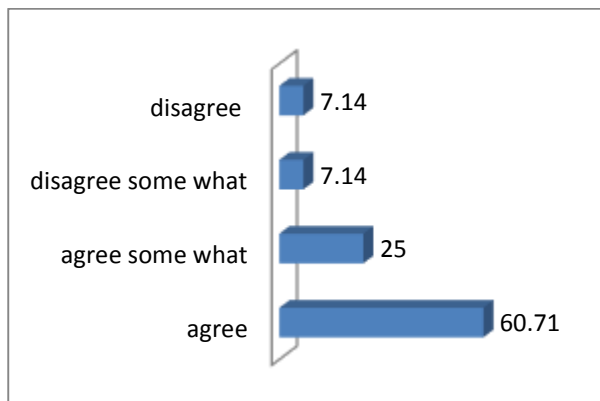
Fig. 6: We were encouraged to look for links between subject and this unit and others.
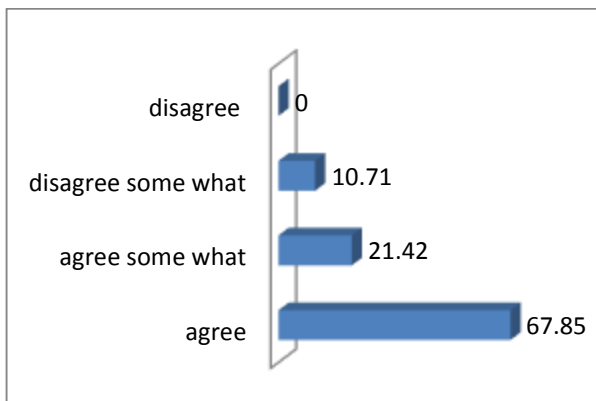
Fig. 7: The handouts and other materials we were given helped me to understand the unit.
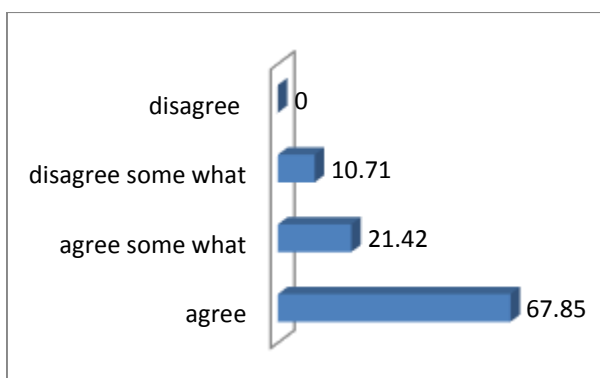
Fig. 8: We weren't just given information; staff explained how knowledge is developed in this subject
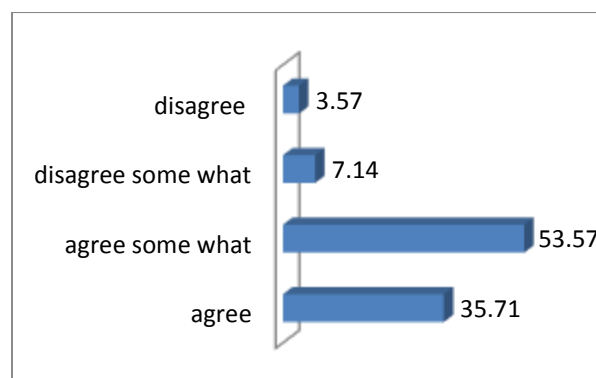

Fig. 9: The teaching encouraged me to rethink my understanding of some aspects of the   subject
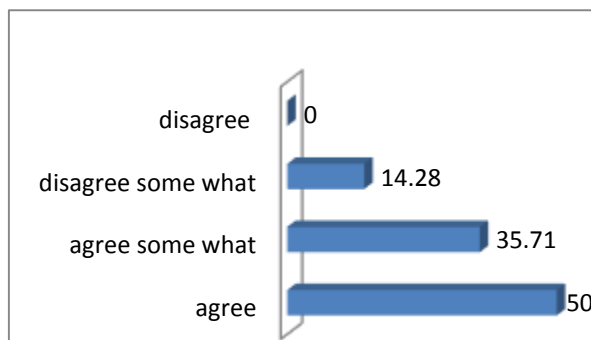

Fig. 10: Plenty of examples and illustrations were given help us to grasp things better.

As seen in figure 6, it is observed that 60% of student agrees with the fact that, they were encouraged to look for links between this unit and others.

Figure 7 demonstrates that 67% of students were agreed that, the handouts and other materials are given helped them to understand the unit. Figure 8 indicates that 64% students have agreed that they weren't just given information; staff explained how knowledge is developed in this subject. According to figures 9, more than 53 % of students agreed somewhat that the teaching encouraged them to rethink their understanding of some aspects of the subject. Fig. 10 indicates that 50% of students have agreed that plenty of examples and illustrations were given to help them to grasp things better.

Students and Teacher interaction:
Figures 11, 12, 13, 14 and 15 represent the distribution of surveyed students' answers according to the third sub-section – co-ordination between students and teacher during project work.
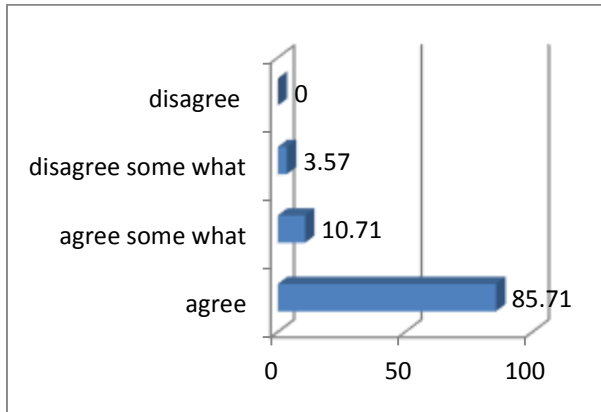

Fig. 11: Students supported each other and tried to give help when it was needed.
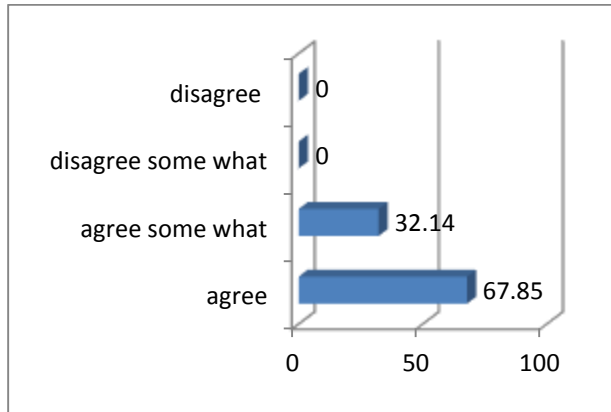

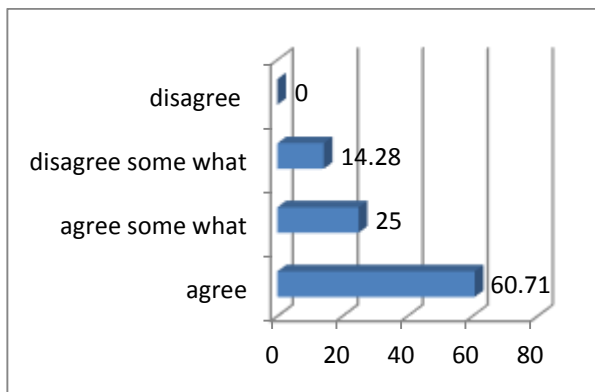**Fig. 12: Talking with other students helped me to develop my understanding**
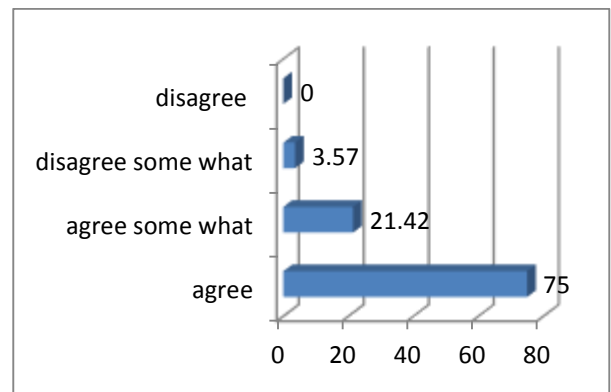

Fig. 13: I enjoyed being involved in this course unit.

Fig. 14: Staff helped us to see how you are supposed to think and reach conclusions in this subject
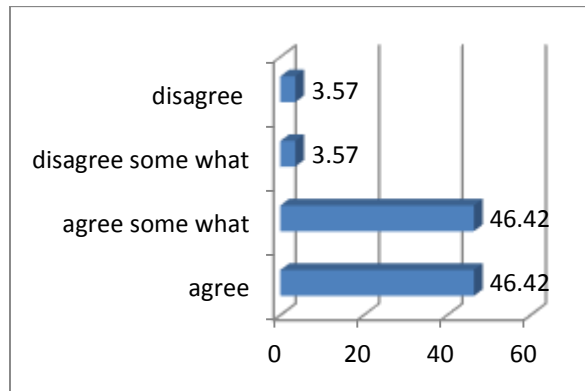
Fig. 15: I found I could generally work comfortably with other students on this unit

As seen in figure 11, it is observed that 85% of students agreed with the fact that, they supported each other and tried to give help when it was needed. Figure 12 demonstrates that 67% of students were agreed that, talking with other students helped them to develop their understanding Figure 13 indicates that 75% of students have agreed that they enjoyed being involved in this course unit

According to figure 14, more than 60 % of students agreed that Staff helped them to see how they were supposed to think and reach conclusions in this subject Figure 15 indicates that 46% of students have agreed and 46% agree somewhat that they found that they could generally work comfortably with other students on this unit.

Assessment and other set work:
Figures 16, 17, 18, 19, 20 and 21 present the distribution of surveyed students' answers according to the fourth sub-section – assessment and other set work during project work.
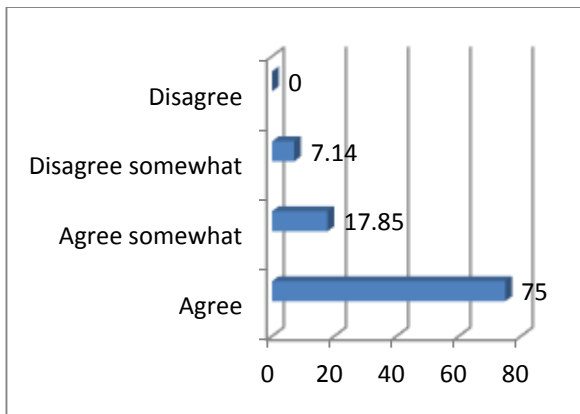
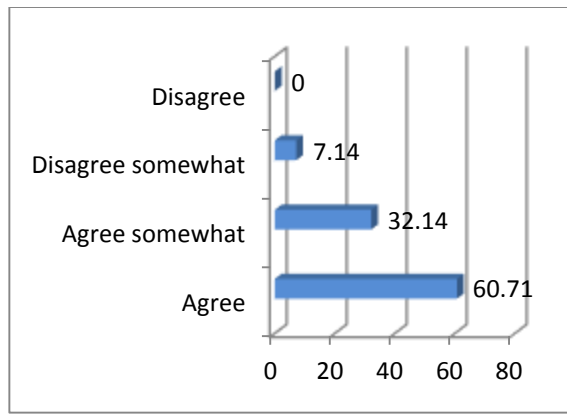**Fig. 16: I was encouraged to think about how best to tackle the set work.**

Fig. 17: The feedback given on my work helped me to improve my ways of learning and studying
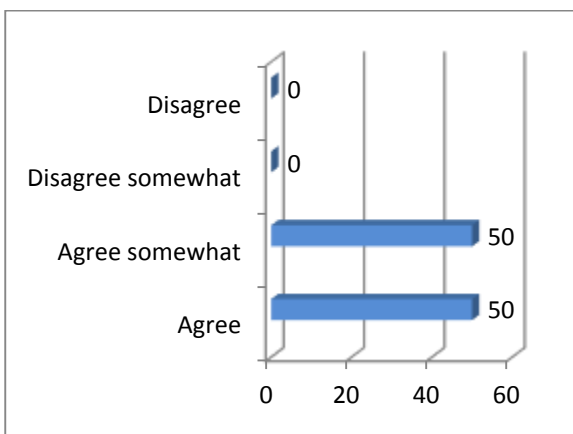

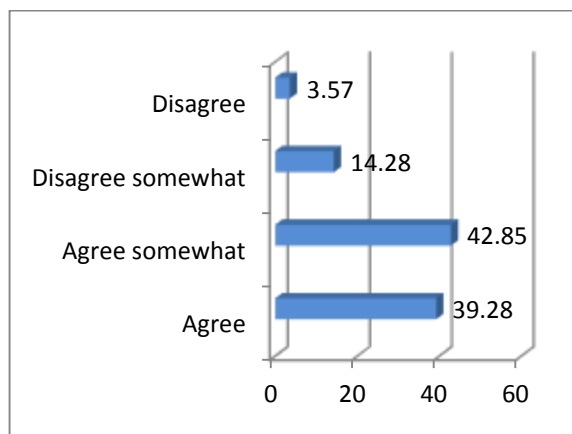**Fig. 18: Doing the set work helped me to think about how evidence is used in this subject.**

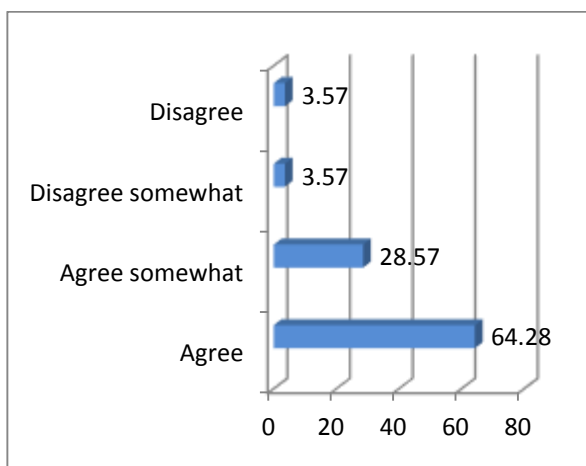**Fig. 19: To do well in this course unit, you had to think critically about the topics**

Fig. 20: The set work helped me to make connections to my existing knowledge or experience.
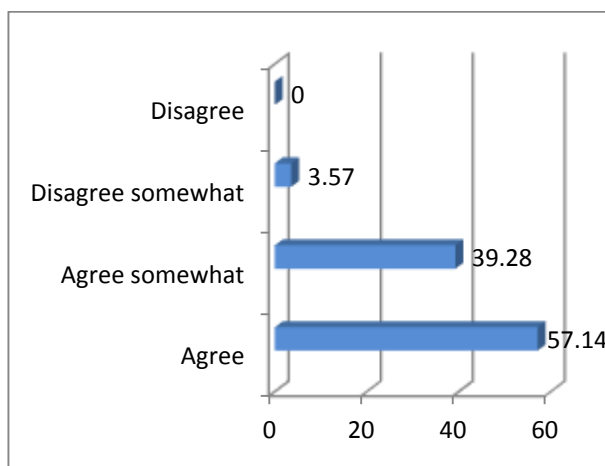

Fig. 21: The feedback given on my set work helped to clarify things I hadn't fully understood.

As seen in figure 16, it is observed that 75% of students agreed with the fact that, they were encouraged to think about how best to tackle the set work. Figure 17 demonstrates that 60% students were agreed that, the feedback given on their work helped them to improve their ways of learning and studying Figure 18 indicates that 50% students have agreed and 50% somewhat agreed that, doing the set work helped them to think about how evidence is used in this subject.

According to figures 19, more than 42 % students somewhat agreed that to do well in this course unit, they had to think critically about the topics in Fig. 20 indicates that 64% students have agreed the set work helped them to make connections to their existing knowledge or experience. Figure 21. Indicates that 57% of students agreed that, the feedback given on their work helped to clarify things they hadn't fully understood.

Demands made by the course unit:
Figures 22, 23, 24, 25,26,27,28 and 29 present the distribution of surveyed students' answers according to the fifth sub-section which focus on the difficulty level of the demands made by the course unit during project work.
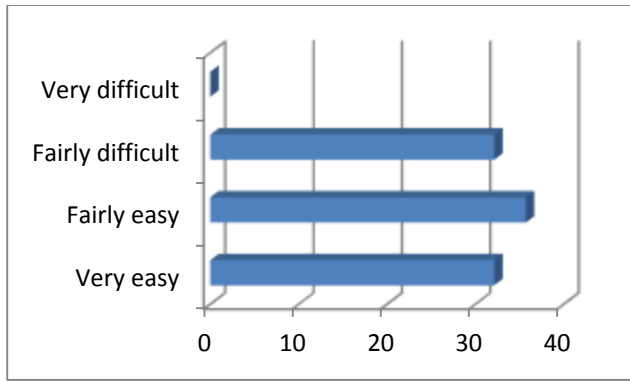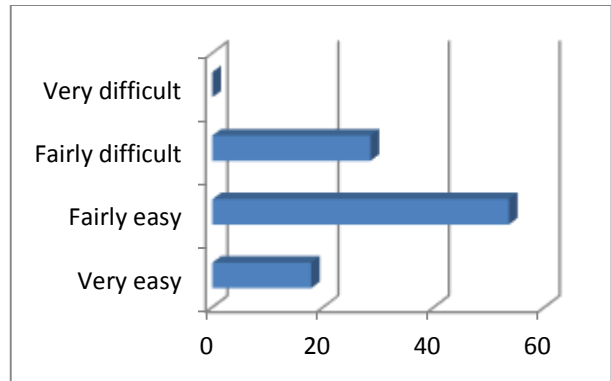
Fig. 22: The rate at which new material was introduced
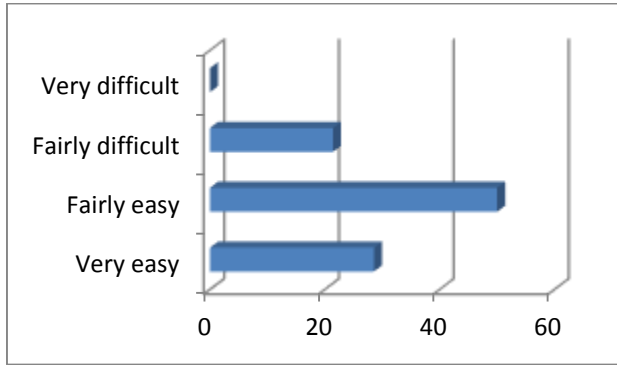

Fig. 23: The ideas and problems I had to deal with.

Fig. 24: The skills or technical procedures needed in in this subject.
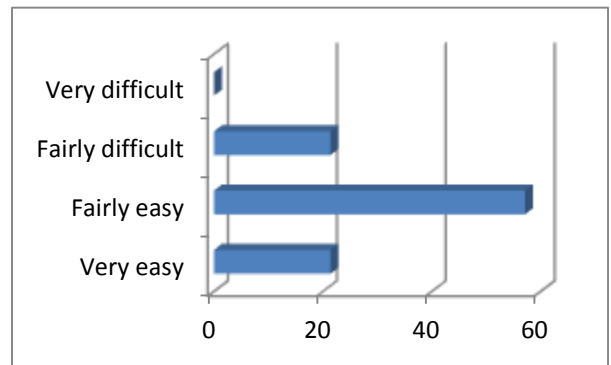

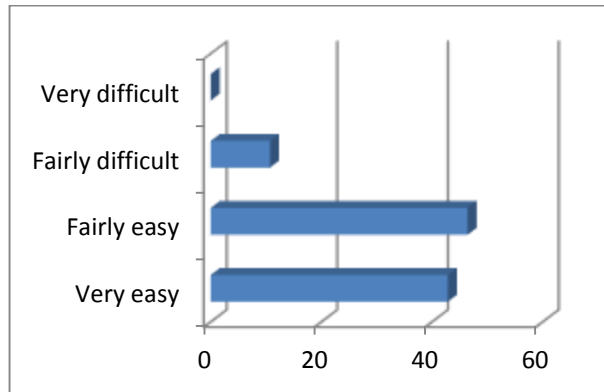**Fig. 25: The amount of work I was expected to do.**

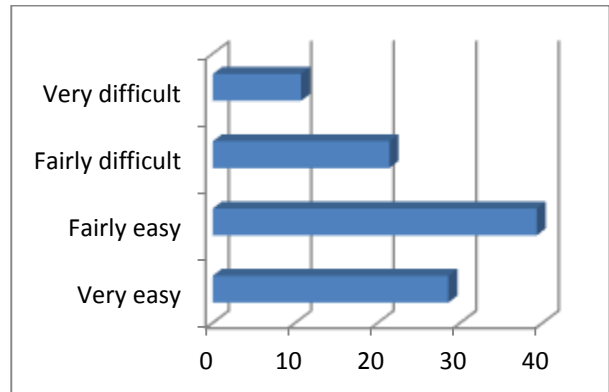**Fig. 26: Working with other students**

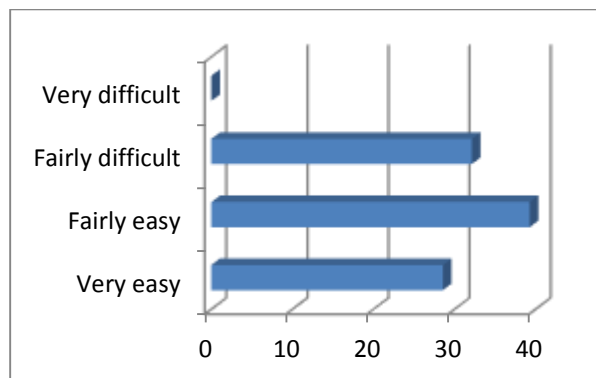**Fig. 27: Organizing and being responsible for my own learning.**

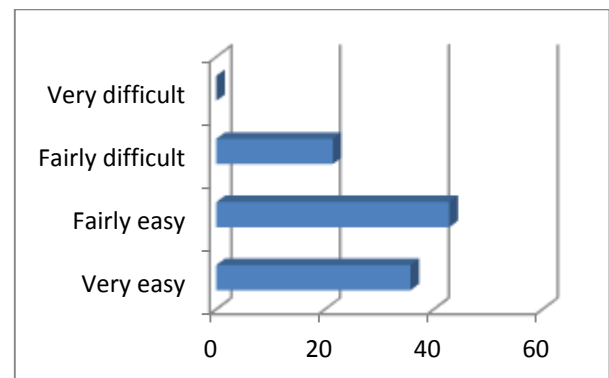**Fig. 28: Communicating knowledge and ideas effectively.**

Fig. 29: Tracking down information for myself.

As seen in the figure 22.it is observed that 35% of students agreed that the rate at which new material was introduced was fair. Figure 23 demonstrates that 53% of students were agreed that, the ideas and problems they had to deal with were fairly easy. Figure 24 indicates that 50% of students have agreed that the skills or technical procedures needed in this subject were easy. According to figures 25, it is observed that 57 % of students agreed that the amount of work they have expected to do was fairly easy. Figure 26 indicates that 46% of students have agreed that working with other students was fairly easy. Figure 27. Indicates that39% of students agreed that organizing and being responsible for their own learning was fairly easy. Figure 28. Indicates that39% of students agreed that communicating knowledge and ideas effectively was fairly easy. Figure 29 indicates that 42 % of students agreed that tracking down information i.e. Technology/ computing skills were easy for themselves.

Learning outcomes from the course unit:
Figures 30, 31, 32, 33,34,35,36 and 37 present the distribution of surveyed students' answers according to the sixth sub-section which focus on what you learning outcomes during the project.
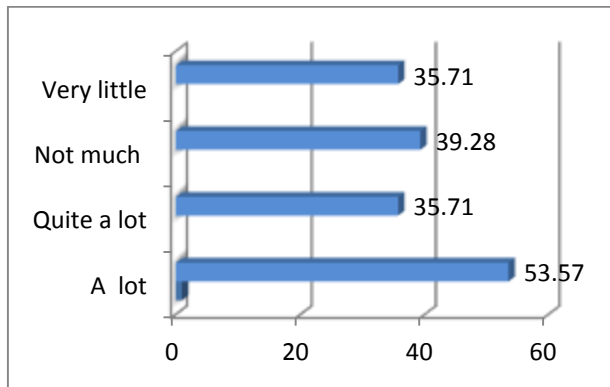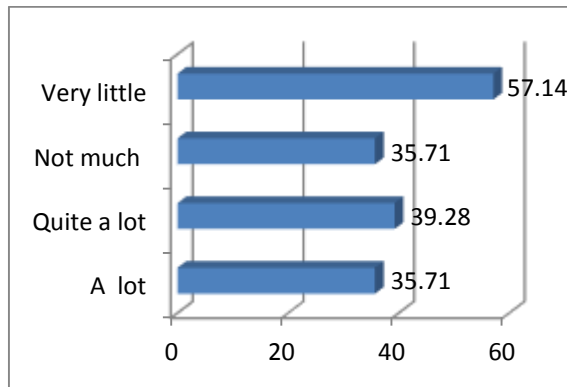

Fig. 30: Knowledge and understanding of the topics
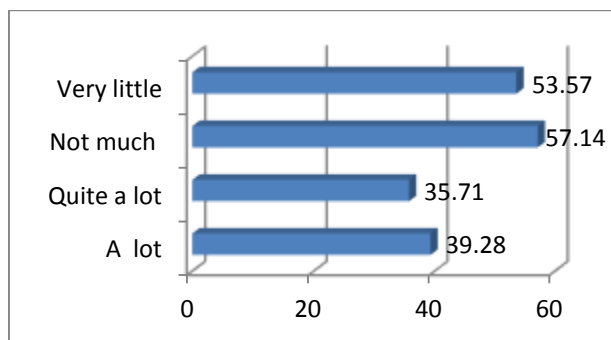

Fig. 31: Ability to think about ideas or to solve problems

Fig. 32: Skills or technical procedures specific to the subject.
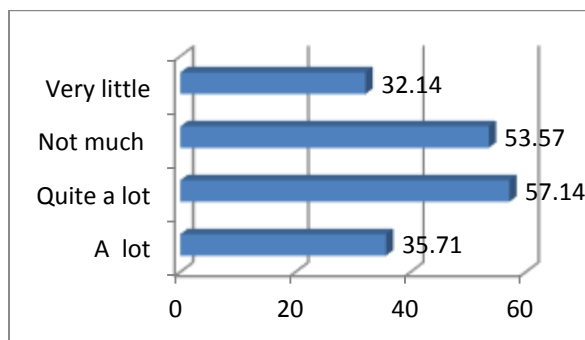

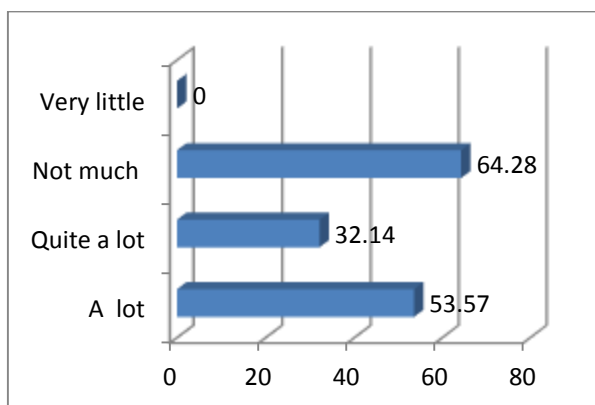**Fig. 33: Ability to work with other students.**

Fig. 34: Organizing and being responsible for my own learning.
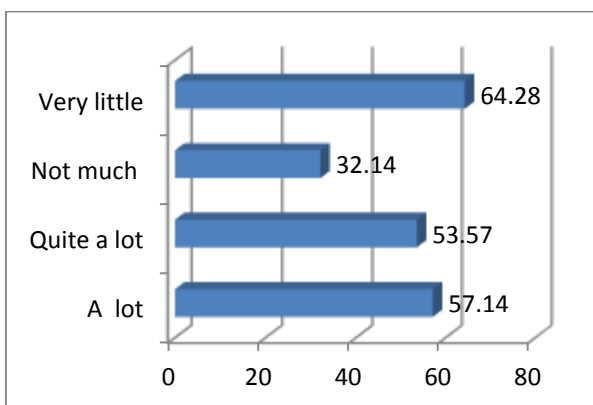

Fig. 35: Ability to communicate knowledge and ideas effectively.

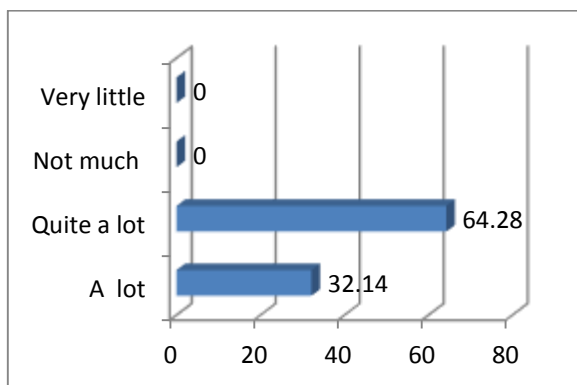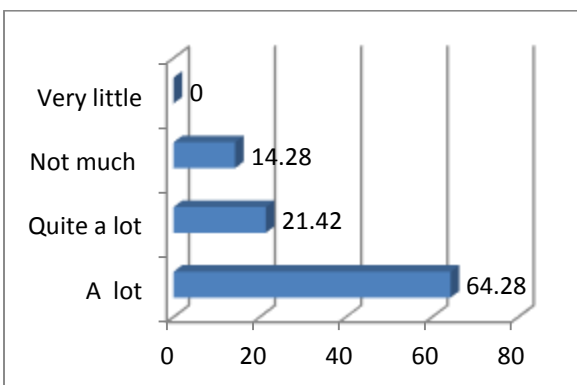**Fig. 36: Ability to track down information in this subject area.**

Fig. 37: Information technology/computing skills (e.g WWW, email, word processing).

As seen in figure 30 it is observed that 53% of students agreed that knowledge and understanding of the topics covered was a lot . Figure 31 demonstrates that 57% of students found it difficult, to think about ideas or to solve problems. Figure 32 indicates that

57% of students have believed that few skills or technical procedures specific to the subject they had learned. According to figures 33, it is observed that 57% students emphasized that skill of working with other students was developed quite a lot. Figure 34 reflects that 64% students have agreed that skill of organizing and being responsible for their own learning was not much achieved. Figure 35. Indicates that 64% of students agreed that there was lack of ability to communicate knowledge and ideas effectively. Figure 36. Indicates that 64% of students agreed that ability to track down information in the specified area was developed quite a lot. Figure 37. Indicates that 64 % of students agreed that skill of data collection and processing was enhanced during project work.

4. DISCUSSION AND SUGGESTIONS
Few students were systematically studying before handling the micro projects. They tried to find better ways of tracking down information for better understanding of the subject. While learning through micro-project students were encouraged to link the unit under study with other units of the subject. Learning through micro-project encouraged the students to rethink their understanding of some aspects of the subject. Students achieved Knowledge and understood different concepts in the topic through this method Interpersonal skills like team building, leadership, communication, group harmony and critical thinking were developed. Students were encouraged to tackle the set work and improve their ways of learning and studying. Problems they have to deal with were a little bit difficult while performing the project. Organization skill, problem-solving and self-learning approach and time management were fairly achieved.

5. REFERENCES
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[4] https://iase-web.org/documents/book1/chapter11.pdf
[5] https://www.ukessays.com/essays/education/traditional-versus-modern-methods-of-effective-teaching-education-essay.php