TECHNOLOGY AND COLLABORATIVE LEARNING

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Abstract: This paper aims to highlight the importance of collaborative learning as a means to enhance students’ ability to develop analytical skills, acquire mastery in a concept, cultivate higher order thinking skills and solve problems in the teaching and learning process. It is observed that there is deterioration in the students’ ability to communicate in real life situations and also their ability to think independently. One of the reasons could be the way information is imparted in the class. The teacher takes control of the class and is considered to be the primary source of providing information. Students are also tested for knowledge acquisition and this leads to lack of understanding of a concept, poor problem solving and analytical skills and inability to invent new ideas. The selection of the learning material is mostly at the hands of the teacher and most of the time it is graded according to the level that the teachers presume is adequate or necessary for the learners. So a change of approach is felt. It is believed that if the responsibility of selecting material is handed over to the students it can lead to effective learning in terms of acquisition of the four basic skills. In order to find out the effectiveness of implementing collaborative learning as a tool for improving higher order thinking, an experiment was conducted with the undergraduate technical students. Results indicated that students gained confidence in using the target language, actively participated in the tasks designed and developed their problem solving and analytical skills. With the help of this method the students were exposed to new words and practice them with their peers as well as involve themselves in the tasks. This led to an improved self-esteem. In an age of ever-changing technologies it is felt that teachers renew their efforts to teach traditional reading and analytical skills with the help of new and modern methodology.

Keywords: Collaborative learning, Technology, learner-centred, task based approach, analytical skills, thinking skills, inventing new ideas.

I. Introduction

Good communication skills are a requisite in all kinds of situations either at home or at workplace. The observation is that there is deterioration in students’ ability to communicate in social situations, and also their ability to think independently and invent new ideas. The present scenario could be the result of the dominance of the teacher –centred classroom where there is hardly any involvement of the students. Students are passive recipients of information. In such a situation the activities assigned to the learners appear as part of their routine work that needs to be fulfilled. The result is that students are unable to think in the target language even after completion of their course. They lack confidence in speaking and writing as well as possess poor problem solving and analytical skills. This hampers their success in their professional life.

There is an increasing demand for technical education in India. This is noticeable in the increase in the number of students pursuing Engineering courses. Consequently it has become difficult for the language teachers to give individual attention to the acquisition of skills. In such a situation it is imperative to understand that the increase in the number of students means the possibility of varied learning needs and learning styles that is reflected in their diverse cultural and linguistic backgrounds.

The knowledge or the familiarity of using computers is apparent with technical students. This proficiency can help the language teacher in enabling the students to work in groups, enhance their ability to assimilate multiple views to deepen knowledge and promote critical thinking, learn how to work cooperatively and support each other, develop independent learning strategies to communicate effectively in real life situations and meet the global challenges.

This study aims to incorporate collaborative learning in the curriculum of the undergraduate Engineering students in order to facilitate deep understanding of a concept, and provide them with opportunities that facilitate multiple and flexible perspectives in writing and also encourage them to engage in subject specific discussions with peers, develop effective teamwork and communication that result in lifelong learning and problem-solving’
abilities and stimulate creativity. It also attempts to prove that by encouraging collaborative learning in the classroom students can avoid being passive learners and instead improve their learning experiences by interacting and doing using appropriate projects, activities, and technologies.

Digital technology has been used in higher education classrooms in India but only to the level of basic word processing and Internet access. With the advancement of technology, there is an abundance of new media that is available which includes not only text and hypertext, but also voice, music, graphics, photos, animation and video. Recent research on the effects of the new media in the classroom suggests that these tools greatly encourage active and engaged learning among today’s students. The contributions of the new technologies have been shown to stimulate skills such as reasoning and problem solving abilities, as well as helping students learn how to learn, and how to become creative (Grégoire 1996).

II. OVERVIEW OF COLLABORATIVE LEARNING

Collaborative working is perceived as a means of working more creatively, a ‘two heads are better than one’ approach, and a means to improving learning (Thorley & Gregory, 1994; Edwards & Clear, 2001). This concept is grounded in the work of Lev Vygotsky (1978). His work highlights the need of the individual to work in association with social activity which consequently leads to cognitive development. Peers, therefore, play an important role in encouraging learning. Learners play an active part and assume responsibility for their own learning, solving problems together with their peers. Research in collaborative learning indicates that students working together tend to do ‘better’ than those working in competitive and individualistic settings (Tribe, 1994, Gupta, 2004). This type of learning is useful for the students as it helps them to transfer the skill of working in teams to the industry. There is a growing demand in the industry which encourages or looks forward to employ those graduates who have acquired the skill of thinking independently and creatively. With collaborative learning this is possible as it aims to transform the class from the teacher-centred approach to the learner-centred approach and enables the student to become a self-directed learner (Harvey & Mason, 1996; Dearing, 1997; Pew Commission, 1998; Doolan & Barker, 2004). With the advent of technological revolution, it is believed that collaborative learning can be effectively implemented in the language classroom. The use of technology in the language class supports collaborative learning. Using online activity together with collaborative technique gives the learner as well as the teacher the opportunity for scaffolding in the form of learner-to-learner support as well as teacher-to learner support. Lockwood & Gooley, 2001, reported that this type of learning is both cost-effective and an efficient way of managing learning online.

Designing tasks using technological devices by itself prompts students of the present generation to perform an activity. What is important for the teacher is to focus his/her attention to the nature of the task in which the learners are engaged. Instructors therefore need to arouse interest in the learners by creating tasks or activities that are challenging and motivating. Tasks should not be too simple nor too complicated. The task based learning aims to expose students to language and also provides them with opportunities to use it themselves. This is done by combining the tasks and texts by the language teacher. It shifts away from the classroom practices of the teacher-centred lessons and emphasizes learning activities that are student-centred and integrated with real world issues and practices.

To the extent possible motivating students to perform the activity using online group work is more effective as the learning process becomes visible. This enhances the quality of the feedback provided by tutors, in addition to the feedback learners receive from one another (Crook, 2003). A further advantage of working collaboratively online is that the tutor can view how well the group is working together and can monitor the pattern of performance within the group. It is also a very useful tool for monitoring the level of student engagement amongst their peers. This helps in further understanding students’ study patterns. In collaborative learning the emphasis is on the students and the learning environment.

III. TECHNOLOGY IN THE LANGUAGE CLASSROOM

The use of technology in the classroom can be categorized into two groups. It can be used by the teacher for the purpose of providing instructions, or for the creation of his/her teaching resources. It can also be used as a learning instrument or tool. Using technology as learning instrument is more beneficial as it gives the learner the opportunity to explore, create, analyze, synthesize and internalize the information.

Technology allows for multimedia instruction and a multisensory learning environment. Research has shown that using technology-enhanced multimedia instruction in the classroom helps to tailor instruction to students with different abilities (Wu & Zhang, 2010) and facilitates quick sharing and building of knowledge within the participatory environment (Asselin & Moayeri, 2011). Research also shows that technology-enhanced multimedia instruction increases student motivation (Boehm, 2009; Torff & Tirotta, 2010), develops curiosity and makes learning experiences memorable (Allen, 2003). It is also, “influential in developing creativity amongst learners” (Dale, 2008, p. 3) because it diminishes the need for memorization by replacing “how” by “why” in the classrooms, and by allowing students to become active producers of knowledge (Oklahoma Education Association, 2011).

Children, by their very nature are creative. In order to develop and tap their creative skills the teachers should take the responsibility of providing children with the necessary opportunities and tools in order to have
experiences that can help their creativity and imagination mature. By using technology in the language classroom the attempt is not only to bring the students closer to one another, but also to create an environment where the students can actively connect and interact with one another to share ideas, and make meaningful contributions to each other, society and themselves.

IV. RESEARCH QUESTIONS

The aim of this research is to explore the following questions:
1. Why should teachers and educators use collaborative learning as a method of imparting information?
2. How and to what extent should collaborative learning be incorporated in the curriculum?
3. What is the impact of collaborative learning on students?
4. Is it practical and feasible to implement collaborative learning by using digital packages in classrooms?

V. RESEARCH DESIGN

The study aims to check the effectiveness of collaborative learning as an approach within the internet assisted multimedia in teaching the undergraduate Engineering students. It is hypothesized that the collaborative technique through Internet assisted multimedia can function positively in developing the problem solving and analytical skills of the students and improve the student’s grasp of the context. At the same time using the multimedia to complete the task will improve in the acquisition of the second language. In order to find answers to the above questions, it is necessary to look at the skills used by the students in solving tasks that are used in student data, qualitative. ‘Qualitative’ data is concerned with aspects of solving the tasks using technological devices, specific to a particular group. In this case, it implies the feedback received from the students through interviews, and questionnaire as well as through classroom observation.

VI. SUBJECTS

Out of the total population of undergraduate Engineering students in different disciplines, students of Computer and Information Technology were selected as the sample, because the experimenter taught these students. It was felt that these students would represent the wider population of undergraduate Engineering students as such.

Students of Pillai’s Institute of Information Technology of first year comprised the sample. Two matched groups were needed for the study, namely, the Experimental and the Control. The Experimental group of 25 students was randomly drawn from first year Computer, and the control group of 25 students was randomly drawn from first year Information Technology.

A test was conducted to measure the level of comparability of the two groups. The test indicated that both the groups were at the same level (t=0.23 ) indicating that the groups could be considered to be matched.

A. EXPERIMENTER

The present researcher, who was the regular teacher of the students, conducted the experiment.

VII. MATERIALS AND PROCEDURES

An Entry Stage test (the same as the test of comparability) was conducted at the beginning of the course for both Experimental and Control groups. A similar, though not entirely identical, Exit Stage test was conducted at the end of the course for both the groups.

Based on the test the Experimental Group students were also made to articulate the background information they used in answering the questions in the Entry stage test. This helped the experimenter in designing tasks which required the students to tap their prior information about the subject. The course lasted for three months, with one training session of two hours per week. Since the time required for the completion of the task during the allotted time of 2 hours was insufficient, the researcher encouraged the students to complete the tasks after college hours.

The task was designed by the experimenter. The experimenter alone assessed the tests and conducted the students’ interviews immediately after the tests. On the basis of their response additional tasks would be assigned to the student which was instructed to be executed with the help of the technological devices. The tasks were designed on the basis of the requirement of the curriculum. Depending on the facility provided by the Institution to use the technological devices the experimenter used the synchronous and the asynchronous interaction with the Experimental group. Students of the Control group were treated as in a regular class, which meant that they were assigned tasks that did not require the use of technological devices. The following tasks were designed for the study using the technological devices.

1. Developing writing skill with the aid of videos, images and words.
2. Enhancing creativity by encouraging students to write dialogues. This was done by providing them with a set of dialogues downloaded from the internet and stored in the computer. Students were asked to comment on the respective dialogue assigned and suggest alternative method of writing dialogues.

3. Developing creativity by giving students the plot of a story and encouraging them to write titles.

4. Developing analytical skill with the help of asynchronous interaction. That is various analytical passages and articles downloaded from the internet was stored in the computer and the students were allowed to read through the articles and discuss them with their group members.

5. Tapping their background knowledge and vocabulary by giving students unexpected events (e.g. loss of gravity) and encouraged them to generate a list of consequences of those events.

6. Developing thinking skills in students by giving them the beginning of a story and encouraging them to write the end of the story. They were then asked to interchange their ideas with the other groups using asynchronous interaction.

7. Video was also used to create an impact in understanding concepts, and in the acquisition of skills.

8. Developing thinking and creative skill was also undertaken in the classroom by forming groups and assigning different writing tasks to different groups. The groups were then encouraged to exchange their writing tasks and comment on them.

VIII. RESULTS

The results were based on the analysis of the interviews and the questionnaires answered by the students. Some information about students’ performance could also be gathered from classroom observation.

VIII. QUALITATIVE ANALYSIS

After analyzing the recording of the statements of the Experimental Group it was found that students were at ease and comfortable using technical devices to perform the activity in groups. Group work helped the weaker learners understand the concept better, improved their writing skills and also exposed them to language variety in different situations. So the question as to why teachers and educators use collaborative learning as a method of imparting information in developing their cognitive skills is answered.

One noticeable factor worth mentioning is that students learned and acquired information more effectively in groups or peers rather than doing things individually or with the guidance of the teacher. The positive impact of digital technology on students was felt when they expressed their freedom in performing the tasks. Students were empowered to control their learning. A sense of responsibility and curiosity was also reflected in their handling of the task. It increased collaboration among students, developed their interest in performing the tasks, improved their self-confidence and enhanced classroom performance. The independence and the involvement that was observed in the classroom by the teacher while performing the task helped the teacher to conclude that using technological devices can promote writing competence and tap their creative skills.

To answer the question of practicality and feasibility of digital packages in classrooms, the experimenter used digital technology to the extent it could be incorporated as part of the curriculum. Technology was not used for the sake of technology. Moreover there were limitations to the extent to which the Institution could provide the online facility to the language teacher. Therefore, the experimenter used the asynchronous method of interaction in the language class.

X. CONSTRAINTS

The collaborative method of instruction is undoubtedly an effective means of imparting information and building confidence and encouraging involvement of the learners. In spite of all its positive aspects there were certain problems faced by the experimenter. At times, the implementation of collaborative learning as a methodology in the classroom could be perceived by some as a way of dealing with large student numbers and tight time constraints (Edwards & Clear, 2001; Pilkington et al, 2000; Doolan & Barker, 2003). There is also a possibility of the existence of social and psychological barriers within the group. In such cases collaborative learning does not lead to the desired outcome. The social and cognitive advantages of group learning are lost. This could happen if the group members are not observed or evaluated appropriately by the facilitator.

Another drawback of collaborative learning is that it may not suit all learners, especially those learners who are shy and hesitate to participate in the progress of the group. It is also a fact that some learners may view
collaborative learning as a way of sharing their success with the members of the group. Such learners refuse to collaborate with the other members as this would mean his/her individual efforts are not taken into consideration.

The following factors have to be therefore, kept in mind in order to effectively implement collaborative learning in the classroom.

- Specify goals to pursue instead of content to learn
- Accept a diversity of outcomes instead of demanding common results
- Request the production rather than the communication of knowledge
- Evaluate at the task rather than at the knowledge level
- Build learning teams instead of assigning activities that only have meaning to the individual
- Promote global learning communities instead of remaining localized.
- Encourage students to view their peers as a resource for learning, thereby empowering them.

XI. CONCLUSION

To conclude using collaborative method with the aid of technical devices is an attempt towards motivating students to overcome their writing and reading difficulties. Engaging students in meaningful tasks can enhance cognitive development as well as develop their curiosity in learning. This can only be done when teachers realize the importance of peer learning as a means of developing cognitive and higher order thinking skills as well as the ability to work cooperatively in groups. Students come from different backgrounds and it is difficult for the teacher to provide individual attention to the development of skills in the traditional set up of the class. Most learners are found to lack attention as they become passive recipients of information. So the need is to consider these issues and design activities that encourage the involvement and participation of the student. Further this method of instruction can provide teachers with opportunities to appropriately challenge the scope of students in classrooms today. After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the naming convention prescribed by your conference for the name of your paper. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper.

References


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