Comparative Analysis of The Jigsaw and Lecture Teaching Pedagogies at Secondary Level in Balochistan

Alia Ayub[1], Khadija Karim[2], Mohammad Akram[3] & Sadia Suleman Khan[4]

Abstract

Teaching pedagogies plays an important role in communicating the information to the students. As learner needs more attention in acquiring the information so there is a need to teach them very carefully by practicing the innovative pedagogies. This study was conducted to analyze the impact of a new interactive Jigsaw technique. The objectives were as: To compare the lecture and jigsaw teaching pedagogies, to identify the impact of jigsaw and lecture methods on teaching – learning process and to suggest the teaching strategies for improving the teaching – learning process. Research questions were developed as: What is the difference between lecture and jigsaw teaching pedagogies? What is the impact of the lecture and jigsaw pedagogies on learning? And how teaching – learning process can be improved by using innovative teaching pedagogies? Experimental research design was used to conduct this study. 10 schools were selected through simple random sampling technique. 40 students were selected from each school through simple random sampling techniques from 9th grade (N#400). Sample students from each school were divided in the control (N#200) and experimental groups, (N#200), the experimental group was taught about 15 topics from Islamiyat, Urdu, English, General science and Pakistan Studies through Jigsaw Technique. The teaching of the control group was conducted by applying lecture method. At the end of the teaching-learning process, a test was taken and reflection sheets were filled by the students. Major findings of the results of this study showed that there was a difference in the scores of test in the control group and the experimental group. Students that were in experimental group were high achiever and they reflected that they enjoy the learning a lot. Jigsaw technique also increase their confidence level as they learn as an interactive learner rather than a passive learner, they feel them as a leader, because this technique

[1] Assistant Professor, SBKWU, PAKISTAN, aliaaslam54@yahoo.com

[2] Lecture, SBKWU, PAKISTAN, khadijakarim17@yahoo.com

[3] Ph.D. Scholar, Hamdard University, PAKISTAN, akram.buledi@yahoo.com

[4] Assistant Professor, SBKWU, PAKISTAN, ssuleman_khan786@yahoo.com

also provides them the opportunity to share their learnings, ideas with their classmates. The students of the control group were feeling bored in learning the different concepts. They respond that they need more lectures on understanding the difficult concepts, while the experimental group were very happy that they acquire more knowledge in little time, not only this they felt no more teaching of difficult concepts. Major recommendations are that, teaching – learning process is a difficult process, digestion of the information is difficult as compared to the digestion of the food. So students should be teach through using interesting, innovative and interactive teaching pedagogies to teach different topics. Use of these pedagogies make the teaching – learning process as an enjoyful and interesting activity.

Keywords: Comparative Study, Jigsaw teaching pedagogy, lecture teaching pedagogy

Introduction

Teaching is a process which brings interpersonal changes and improve the performance of the individuals. It is an arrangement of situation and a form of interactive process. Usually in this type of talking all elements of education process like students, teachers and teaching learning processes are involve. All these activities are conducted within the boundary of classroom and a school. And teacher is a crucial element of teaching learning process (Amidon, 1996). A teacher or an educator is an individual who helps and guide other individuals to attain knowledge, proficiencies, and cultural, religious and ethical values. A teacher is a person knowledgeable enough, has different skills and abilities, know the art of explaining and guiding pupils according to their needs. He/she is a person who is able to create behavioral changes in terms of cognitive, affective and psychomotor domains. (Mbise, 2008).

Teacher and Education System

In our education system teacher has the authority and control of the schools and their classrooms. In Pakistan teacher centered teaching techniques are used to run the system smoothly and effectively. Teachers teach through typical lecture method from the years, they find this method of teaching very simple and easy at all level of education system. This leads to the rote learning of the pupils without any deep understanding of scientific ideas, knowledge, theories and phenomenon.

Importance of interactive/cooperative pedagogies

If students are taught through interactive and cooperative teaching pedagogies, they will acquire the knowledge in an effective manner. Cooperative learning also supports teaching of the extraordinary and gifted students. It was indicated

that it might be a proficient method of teaching for creating analyzing skills, because students reflect their own choices and ideas in interactive environment. Jigsaw teaching pedagogy is one of the example of cooperative and interactive learning styles. This study was made efforts to highlight the impact of jigsaw teaching method and the lecture method. The results of this study will be beneficial for the teachers and the students as teacher wants their students learn and understand in a good manner, students need attention during learning, the results of the study will help both how to do so. The results of this study will also be helpful for the policy makers and curriculum developer, as they can improve the policies and curriculum by following the highlighted issues and flaws.

Objectives of the Study

- To compare the jigsaw and lecture teaching pedagogies.

- To highlight the impact of lecture and jigsaw method on teaching – learning process

- To suggest the teaching strategies for improving the teaching – learning process.

Research Questions

- What is the difference between lecture and jigsaw teaching pedagogies?

- What is the impact of the lecture and jigsaw pedagogies on learning?

- How teaching – learning process can be improved by using innovative teaching pedagogies?

Literature Review

Lecture Method

The most common form of instruction, now a day is a lecture method (Hrepic, et al. 2007). This format of teaching is suitable for college students because they are able to note the lecture and to write down the main points. It has been reported that the students learning through lecture method are passive listeners. They are just listening to the lesson from their teachers and getting notes to be prepared for exams (Doucet et al. 1998).

Teacher

Different scholars define the term teacher differently, TUKI dictionary define it as "A teacher is a person who teaches or facilitates the learning process".

Jigsaw Pedagogy

(Dori, et al. 1995) found that the pupils who were taught through the jigsaw technique showed their interest in the class and wished to use the approach again during teaching. They even suggested their friends to learn by this method of teaching.

Comparative Studies of Lecture and Jigsaw Pedagogies

(Fennel, 2009) conducted a research on the use of both lecture and cooperative learning method. He surveyed 208 students who were taught by the said methods. Findings of the study showed that the student found the jigsaw method of teaching to be enjoyable and useful. Very few students were in the favor of lecture method and they were about .05%. The researcher found the jigsaw technique affect the mind set of students towards school. Aronson (2005) elaborated that the students of all levels and ages found interested in jigsaw technique, and when this method was applied, the academic performance were improved and the absentees of the students were decreased.

(Dori, et al. 1995) compared the scores of students, studying in elementary class. The topic "cell" was taught to the students by jigsaw method and by the traditional lecture method. They discovered that students who were taught by jigsaw technique amplified pre-test scores by 70.91% as compare of those who were taught via traditional method which increased only 61.28%. A study was conducted with 50 matric level students. The students were given pre-test and then in the next step were taught half of the course with jigsaw method and half with the lecture method. At the end test was taken again. It was found that there were no major differences in the achievements of the students but declared that there were no adverse effects of using cooperative learning on the matric level. (Thompson and Pledger, 1998).

 Manning and Lucking (1991) explain that all the cooperative learning methods and the jigsaw are not beneficial academically but socially they help the students as well. The jigsaw method is an efficient mode to enable in the students the feeling of equality. Ross, et al. (2002) stated that no specific differences were shown academically in using the lecture method and jigsaw technique. But, because of social context, students reacted to more contented via methods of cooperative learning. Male students are more in the favor of jigsaw technique as compared to female. A qualitative study conducted to see the attitude of student's regarding jigsaw technique. They stated that the low achieving students enjoyed the jigsaw technique more as compared to high achieving students. They pierced this point because the students with lower academic achievement feel more relaxed in minute grouping poised of compassionate, inspiring and competent peers. The students with higher

achieving grades feel that the said topics are not challenging, they are competent enough to learn the topics by themselves. (Dollard, M. W., & Mahoney, K., 2010).

Various literatures have been conducted regarding the use of lecture and cooperative learning methods, and it was found that cooperative learning such as jigsaw technique is more suitable for students than the lecture method. But peek et al. (1995) stated that the jigsaw teaching method is not suitable in all conditions, for all subjects and for all topics. He suggested that lecture format is more appropriate when there is large number of students, large quantity of information to be discussed in front of the students, the need of written notes etc. Enhancing learning is not only done by jigsaw method but the traditional lecture method is also appropriate if suitable conditions are available (Miller, S. K. 2003). There are more than 300 studies conducted to associate the effect of both cooperative learning and outdated lecture method taking place student's achievements. The higher order thinking of students were promoted in more than 168 studies by using cooperative learning methods. On the other it has been noted that the conditions for cooperative learning must be suitable, while lecture method is considered suitable for higher classes only (Lancaster and Strand, 2001).

Many lecturers use traditional method of teaching such as lecture method and they proffered this method. It might be well-known an approach for setting up and upholding orders for their lesson because most of the teachers have no information, and they have no experience about new method of teaching. (Peek, et al. 1995). The students learn more in grouping as compared to listen the lecture from their students. In lecture only teacher is the source of information and the students are only listening the lesson, while in cooperative learning all the students in the group are involved. (Atkins, 2010)

Research Methodology

Research Design

Experimental research design was used to conduct this study. Control and experimental groups were formulated. The experimental group was taught about 15 topics from Islamiyat, Urdu, English, General science and Pakistan Studies through Jigsaw Technique. Control group was taught the same topics through the lecture method. At the end of the teaching a test was taken and reflection sheets were filled by the students.

Sample Size

The sample size for this research study was 400 (secondary school students of 9th grades)

Sampling Technique

Simple random sampling procedure was used to select the sample.

Sampling Selection

10 schools were selected through simple random sampling technique. 40 students were selected from each school through simple random sampling techniques from 9th grade (N#400). Sample students from each school were divided in the control (N#200) and experimental groups (N#200).

Data Collection Instrument

- After the intervention of Jigsaw teaching pedagogy to the experimental group, the post – test was administered to both control and experimental group.
- Reflection sheets

RESULTS AND FINDINGS

Table 1 Independent Sample t-test

Comparison between the scores of lecture and jigsaw

	N	Mean	Std. Deviation	t	df	Sig.
Control Group (CG)	200	34.8750	7.53			
Experimental Group (EXG)	200	67.2750	7.20			
CG – EXG		-32.400	10.92597	-41.937	199	.000

Above table indicates that there is significant difference in the test scores of control group and experimental group [t (199) = -14.937, p <.001]. Mean scores indicate that there is experimental group mean scores is very large (M = 67.2750) than that of mean scores of control group (M = 34.8750), it indicates that students of experimental group show excellent results.

Findings of reflection tool

Reflection regarding Jigsaw pedagogy

- The use of this strategy in the class, verily, makes one feel autonomous as learners especially when one is not merely intricate in peer teaching in a mixed group

- Students feel pleasure while helping their other classmates learning (in group) in order to make them able to bring out the cluster tasks (analyticaliy or synthetically).

- Students responded that, "giving us an opportunity to practice self-teaching it helps to impart confidence and other important life skills. Instead of having material presented to us, we were engaged directly with the material which not only fostered depth of understanding but also helped us unravel the mishmash of the content presented."

- They also reflected that the use of this technique made all of them accountable as individuals and promoted peer learning - imperative for the success of the group, apart from relying upon each other in positive ways.

Reflection regarding Lecture pedagogy

Eric Mazur once mockingly marked, it is a method whereby the address summaries of the trainer become transmitted to the notepads of the students without transitory over the brains of either.

- Students reflected about lecture method as boring as a lecture into one of the most stimulating experiences ever by coupling it with other means of engaging students like videos, charts etc.

- They felt fatigue, during the teaching – learning process.

- Lecture methods appeared as someone yap about a topic endlessly.

- They feel a part of an intellectual, invisible and binding contract. It was as to force oneself to listen to difficult and boring information.

- Apart from a few questions asked here and there, practically no opportunities were presented for the students to think for themselves or try to figure out the nuances of the content being taught.

Discussion

Lecture is characterized by habit and ritual, which we humans take great certainty from and find super comforting. Since time immemorial the tradition lecture approach has contributed to alienating students from learning because not surprisingly why would one want to listen to boring material. Hence, inquiry, critical thinking alongside other important high order skills were left untouched and unpractised. One positive aspect, of course, is the avalanche of information presented that saves us the effort of looking for more information. But the state of passivity characterized by the intake of information without adding much to it made the class uninteresting and non-stimulating.

Reminiscent of a jigsaw puzzle, the jigsaw technique, staying true to its name, attempts to provide a well-structured cooperative learning environment in terms of assignation, attainment (particularly by reverence to rational skills), and satisfaction. Like any other strategy out there it has its own fair share of pitfalls which result from when groups are made carelessly without assigning roles to each individuals. But the advantages most definitely outweigh the disadvantages. Every time this strategy is used in the class it invariably reinforces and contributes to:

1. Making students interdependent on one another in a optimistic way,

2. Making people liable

3. Having students intermingle to endorse student learning whilst at the same time students having a prospect for scrutinizing how fine their groups are operational.

Recommendations

Engage all the students in group discussion

Because each student had something to contribute to the group, one, inevitably, had to develop an expertise resulting in us taking a more active part in the whole activity and walking out of the class with an improve self-image and a sense of confidence in our own abilities and with an understanding that our contribution matters.

Unfolding of the class in a cooperative and collaborative manner

The unfolding of the session in a cooperative and collaborative style made for an incredibly interesting session where the content was mastered and delved into without having a robotic individual presenting the content in the blandest way possible or any other thing hanging over our head.

Harmonizing a myriad of strategies

Enrich the jigsaw teaching pedagogy with myriad of strategies, so that it also helped to cater to individuals with a variety of learning styles with every individual benefiting in some way or the other. Usually one active and sharp students is made

Reduce the Dominancy

Usually an active and sharp student is made as the leader of the discussion group. it is the duty of the teacher ask him/her to call each member of group with name and assign different concepts for discussion to each of the students. Moreover, provide the opportunity to all student to share the discussion material in front of the class.

Enhance learning experiences through exciting challenges

Group discussion may be appeared boring for the bright students. So, teachers should engaged the students in the exciting challenges by considering the level of interest of the students.

Motivate the slow learner

Slow learner may feel jigsaw as difficult process. Teachers should motivate them for discussion and monitor their discussion continuously. During monitoring process guide them how to start discussion and how to sum up. After that provide the opportunity to the slow learner to share their views within expert group, this will refine the ideas of the slow learners.

References

Amidon, E. (1966). INTERACTION ANALYSIS--RECENT DEVELOPMENTS.

Aronson. A. (2005). Assessment of the Use of the Jigsaw Method and Active Learning in Non-Majors, Introductory Biology. Bioscene: Journal of College Biology Teaching, 31(4), 4-10.

Atkins, J. (2010). Creating Collaboration. English Journal, 99(5), 12-13.

Cordoso, D.C., Cristiano, M.P., and Arent, C.O. (2009). Development of new Didactic materials for teaching Science and Biology. The importance of the new education Practice. Online Journal of Biological Science, 9(1), 1-5

Doucet, M. D., Purdy, R. A., Kaufman, D. M. & Langille, D. B. (1998). Comparison of problem-based learning and lecture format in continuing medical education on headache and management. Medical Education, 32(6) 590-596

Dollard, M. W., & Mahoney, K. (2010). How effective is the Jigsaw method when used to introduce new science curricula in middle school science. Ontario Action Researcher, 10(3), 50-64.

Dory, Y. J., Yeroslavski, O., & Lazarowitz, R. (1995). The effect of teaching the cell topic using the jigsaw method on students' achievement and learning activity. Department of education in technology and science Teknion, Israel institute of technology Haifa, Israel, 143-150.

Fennell, M. (2009). Acquiring and refining CBT skills and competencies: Which training methods are perceived to be most effective?. Behavioural and Cognitive Psychotherapy, 37(05), 571-583.

Hrepic, Z., Zollman, D. A., & Rebello, S. N. (2007). Comparing students and experts' understanding of the content of a lecture. Journal of Science and Educational Technology , 16(3), 213-224.

Lancaster, K. A., & Strand, C. A. (2001). Using the team-learning model in a managerial accounting class: An experiment in cooperative learning. Issues in Accounting Education, 16(4), 549-567

Lee Manning, M., & Lucking, R. (1991). The what, why, and how of cooperative learning. The Clearing House, 64(3), 152-156.

Mbise, A.,(2008). Situation analysis and needs assessment on special needs and inclusive education in Tanzania. Tanzania Ministry of education and vocational training.

Miller, S. K. (2003). A comparison of student outcomes following problem based learning instruction versus traditional lecture learning in a graduate pharmacology course. Journal of the American Academy of Nurse Practitioners , 15(12), 550-556

Peek, L. E., Winking, C., &Peek, G. S. (1995). Cooperative learning activities: Managerial accounting. Issues in Accounting Education, 10(1), 111-125

Ross, M. C., Seaborn, A. W., & Wilson, E. K. (2002, January). Is Cooperative Learning a Valuable Instructional Method for Teaching Social Studies to Urban African American Students?. In NAAAS Conference Proceedings (p. 870). National Association of African American Studies.

Thompson, M., & Pledger, L. (1998). Cooperative Learning versus Traditional Lecture Format: A Preliminary Study.