

EFFECT OF COOPERATIVE LEARNING ON COGNITIVE ENGAGEMENT OF SECONDARY SCHOOL STUDENTS

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ABSTRACT

Cooperative learning is a strategy to teach students by adopting different teaching methods. It affects different aspects of students learning process. Cognitive engagement is one of the most important aspects of students learning process which is greatly affected by this strategy. This study finds the effect of this strategy on cognitive engagement of the secondary school students. It was an experimental study in nature. 50 students of 10th class were selected as the sample of the study by using convenient sampling. Control group was comprised of twenty-five (25) students. Experimental group was also comprised of twenty-five (25) students. Team Assisted Individualization (TAI) method of cooperative learning and traditional method were used to teach the students of experimental group and control group respectively. This experiment was lasted for six weeks. Pretest and posttest control group design was used. The cognitive engagement scale developed by Kong Wong and Lam (2003) was employed. Independent Sample t-test was used to make analysis of the collected data. This study claimed that cooperative learning had significant effect on cognitive engagement. Experimental group learnt significantly higher than control group.

Keywords: Cooperative learning, engagement, cognitive engagement

INTRODUCTION

Development of human beings is basically associated with education as backbone in the society. Collaboration and cooperation among human beings are very necessary and inevitable. Humans are considered very much societal because they live in a society and dependent on each other for their all kinds of needs to be fulfilled. His survival is impossible in isolation. Some situations are handled through intelligence and experiences but some are needed to be sorted out. Education is a way to change the lives of the human so it is very crucial for members of the society. Learning environment is also supported to make it successful and fruitful. It is a burning matter that how to provide a vast and mature success to initiate and sustain the quality of the learning process. It is a strategy in which they work supportively and confer emerging ideas with their peers. Students are also remunerated in the form of group inducements or may be separately. It requires a series of activities and help individuals to attain pre-determined goals with academic excellence and content specification. It has served as a mean of teamwork and prized tool for the instruction. Cooperation occurs by collaboratively working of students in groups for promoting almost every aspect as their self-knowledge upshots as well as the educational endings of their fellow learners. Regardless to any strategy adopted, cooperation is extremely necessary between teacher and student. Classroom environment is crucial in teaching and learning process, keeping in view the same essence teacher has to introduce best possible learning opportunities and give the most affective environment to the learners (Skinner & Pitzer, 2012).

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A fundamental understanding about cognitive engagement is denoted as pupils' opinions and discernment grading to classroom learning process, strive hard for knowledge, category and extent of practices that are employed by learners (Walker et al., 2006). They devote their attentiveness in educational process (Fredricks et al., 2004). Cognitive engagement makes students attentive, dive into knowledge gaining procedure, regulate devotion and focus on the work at hand. Based on discussion and participation students are able to achieve their ultimate ends. An increase in students' inspiration, curiosity and engagement are necessarily resulted by CL. The stretch engagement is rooted in the ideas when students gain insight and have in- depth information about the learning material and learning is agonized and pretentious when learners are disengaged. In this study cognitive engagement with Cooperative learning is being focused. Cognitive engagement makes the student-faculty contact strong, dynamic learning, speedy feedback from the teacher, time on task learning, high potentials from the learning process, and respect for various aptitudes and conducts of teaching and learning.

REVIEW OF RELATED LITERATURE

Roots of Cooperative Learning

Unique techniques and methods of teaching are known as cooperative learning. Students' learning is estimated to be enlarged and deepened. Cooperative learning is a sound edge in the era of science and technology. It has very strong and deep roots as the most powerful strategy employed in the teaching and engaging students to the learning process. In the early decade of 19th century Dewey's slogan "Learning by doing" was taken the most crucial expression containing inspiration, collaboration and healthy environment. Cooperative learning accelerates the educational attainment and produces social cooperation and affiliation among individuals (Slavin, 2011). Cooperative learning encompasses many characteristics in the classroom: interdependence in a positive way, face-to-face communication, and individual responsibility, heterogeneously grouping of the learners, socialization, group autonomy and equal participation. Traditional approaches are not as beneficial as cooperative learning. Traditional learning methods do not make the cooperation so easy and beneficial. Students are the active participants of the learning process not passive listeners (Miller, 2011). Collaboration and cooperation is necessarily needed in learning through shifting the ideas from different angles. Communication in groups leads to make promising adjustment in various thoughts for students who have diverse aptitudes, attitudes, intelligence and also different experiences (Wyk, 2012). Students' self- esteem is enriched by cooperative learning and students with help of their peers get engaged in the learning. Level of communication serves a vital role to decrease anxiety and pressure in learning that is possible by utilizing cooperative learning. Classroom adjustment, interpersonal relationship and positive environment are the important and crucial factors that produced by the use of cooperative learning strategies in the classroom settings. Cooperative learning is a way of making the learners able to handle all the activities in the classroom related to all problems with cooperation, commitment, involvement and collaboration (Johnson & Johnson, 2018; Nasser, 2019).

Cognitive Elaboration in Cooperative Learning

Cognitive process is also adhered to the cooperative learning but it is not solely related to the progress in learning process. Cognitive elaboration is a way to describe the learning outcomes with other students. Cognition is greatly facilitated by the cooperation and collaboration and proved a helping hand for the development of cognitive aspect.

What is Engagement?

The concept of engagement may be understood as engrossment and connection. Definitely, students' engagement as described as participation, obligation and readiness for the learning with great motivation.

Cognitive Engagement

Cognitive engagement refers to the engagement in purposeful way to the specific time for doing that task. It also counts pupil's behavior and attitude towards learning. It is beyond the attachment and cooperation to the present topic only. It is the process of attention which involves the mental activities for regulation of mental process, contemplation and understanding for complicated ideas related to learning process (Helme & Clarke, 2001).

Kuh (2009) orates that collaborative problem solving gives students an outlook to handle the subject matter extraordinarily operational and makes their approach mature. They deeply understand

what they are going to learn and get mastery at handling impediment, enduring obscurity and people with various perspectives. In this current paper, students' engagement has been intellectualized in term of cognitive engagement. It is drawn from the idea of investment and can be illustrated as the psychological investment in which students pay its efforts to understand a topic indestructibly. Students' homework, assignments, regularity and participation are the matchless fruits of cognitive engagement. Cognitive engagement is considered a more unwavering feature of students' unconventionality. It makes students to feel more reliant on the job at hand because it determines the degree of students' self-sufficiency. Being engaged in discussions, browsing for new material or attending to lecture is consequently emerged in various styles of cognitive engagement instigated by different stages of self-sufficiency. When searching for substantiation on the internet then students autonomously link in self-originated and investigative actions and stage of independence is comparatively high primarily contributing to cognitive engagement. Group work and engaging in debates can be stemmed in feelings of independence, because work is being done dynamically. To be brief, it is assumed that the intrinsic autonomy level is related to an activity and momentarily concluded in cognitive engagement. Minor stage of cognition implicates monotonous actions and outlook as remembering and implanting a suggested explanation. Higher level of cognition persuades students and crafts cognitive expertise and something except rote learning. Simultaneously, the disengaged students are nothing being everything and unable to make themselves functional in their academic settings (Hu & Kuh, 2002).

Recent studies described that cooperative learning strategies facilitate students in reducing anxiety, improving cognitive engagement and producing social commitment. Collaboration and cooperation produce positive sense of commitment and engagement among students towards learning. Cooperative learning also helps students to grow their cognitive level significantly higher (Costley's, 2021; Makrakis, 2020; Sulaiman & Thakur, 2022). Researches also resulted in cooperative learning effectively engage students for cultivating their retention rate, achievement and produces reasonable increase in their understanding level. Likewise, it was also mentioned to keep it in view for the teachers in making cooperative strategy as a method for top stage of learning (Kim 2013; Tran, 2014; &Pandya, 2017). Nevertheless, deficiency of student engagement is a ubiquitous issue in educational field even in the classroom settings. Cognitive engagement is the key factor for the achievement of the students and several types of activities are influential to engage students cognitively. Convergent information is gained supportive for instructors, psychologists and also investigators to find the extent of student's assignation. Engagement is the crucial factor in stimulating educational accomplishment and educational ends (Hu et al., 2012). Cognitive engagement was highly fixed throughout the lectures by attaching students facilitating to learn and understand more than they hear. Communication and collaboration are vital during the learning environment (Cavanagh, 2011). Pupils respected the societal facets of doing work with fellows, but it was fewer probable to settle collaboration facilitated students to succeed.

By some scholars as Jerome et al. (2011) it is founded that cognitive engagement is highly transpired and significantly increased. It is defined to produce expertise only group-based assessment is not sufficient and enhance reading and comprehension ability of students. Cognitive and social development can be engrossed through metacognitive progression. Cognitive engagement and interface are very indispensably important machineries for educational surroundings. Communication and cognitive engagement in online conversation considered crucial and imperative to pave novel horizons of consideration. Student outcomes such as academic achievement of the mathematical conceptions, learners' approaches toward the topic and their educational proficiencies mathematics achievement and attitudes pupils' lively participation attainment in learning of science subject (Jayapraba, 2013; Altun, 2015) students' tactics to learning with elegances as interceding inconstant (Toole, 2015). Students' engagement and motivation are also being discussed through various methods. Omer and Alioon (2017) have designed collaborative m-learning to observe the students' engagement and motivation through mixed method research design. Analysis of the data showed that collaborative activities have been proved a great source of enhancing engagement and motivation in learning computer. Motivation is also considered as a great force to maximize the learning process and proves helpful in learning process. So, it is considered a lot in the field of research. Online collaborative learning is the sufficient way to enhance engagement and group awareness. It was experimental research (Liu et al., 2018).

OBJECTIVE

To find the effect of cooperative learning on students' cognitive engagement.

Hypotheses

H₀₁: There is no significant difference between pre-test scores of control group and experimental group on the level of cognitive engagement.

H₀₂: There is no significant difference between posttest scores of control group and experimental group on the level of cognitive engagement.

SIGNIFICANCE OF THE STUDY

This study has given a sensible influence for considering concepts and made a variation in students' cognitive engagement, personality and development. This study provides facilitating environment for teachers to maintain students in significant interface while English learning process. The findings of the current research enable students to comprehend content profoundly and produces sound links to actual life situation. This paper has also produced prospect on the part of the teachers for preparing lecture that occupies pupils in teaching and learning English. This paper attempts to be supportive to make perfections in the cognitive domain.

RESEARCH METHODOLOGY AND PROCEDURE

True experimental research was adopted. All girls' secondary schools of District Sheikhpura were the population of this study. Fifty (50) students in 10th class of a Govt Girls High school in Sheikhpura were the sample which is conveniently selected. Team Assisted Individualization (TAI) method of cooperative learning and conventional method was chosen to arrange the teaching periods for experimental group and control group respectively.

Table 1.1 Design of the Study

Group	Pre-test O	Treatment X	Posttest O
Control	Cognitive Engagement Towards Learning English	No	Cognitive Engagement Towards Learning English
Experimental	Cognitive Engagement Towards Learning English	Yes	Cognitive Engagement Towards Learning English

Table 1.2 Pair Matching of Both Groups

Students	Experimental group	Control group
High qualifiers	5	5
Middle Scorers	15	15
Low Scorers	5	5
Total	25	25

The scale developed by Kong Wong and Lam (2003) was employed by the researcher to measure cognitive engagement of students with 0.81 reliability. Same number of students was present in both groups. Both groups had been taught by the same teacher. Duration of time was thirty-five (35) minutes. Pretest and posttest were administered.

Data Analysis and Interpretation

Data were collected and analyzed by using Independent Sample t-test.

Table 1.3 Pretest Score Comparison of Two Groups on Cognitive Engagement

Group	N	Mean	SD	t	df	p
Experimental group	25	76.04	4.531	1.981	59	.066
Control group	25	73.50	3.432			

p> 0.05

The analysis in the table above indicates that difference in mean scores of two groups. It means there is no significant difference between two groups before treatment. Both groups are considered equal.

Table 1.4 Posttest Score Comparison of Two Groups on Cognitive Engagement

Group	N	Mean	SD	t	df	P
Experimental group	25	79.89	3.100	18.281	59	0.00
Control group	25	49.20	4.566			

$p < 0.05$

The table shown above illustrates that both groups are significantly different after treatment. It means that experimental group scored notably higher mean and standard deviation than control group on posttest.

RESULTS AND DISCUSSION

Analysis showed difference in mean scores of experimental group ($M=76.04$, $SD=4.531$) and control group ($M=73.50$, $SD=3.432$) was not considered as significant at $p > 0.05$ on pretest of cognitive engagement. The posttest of cognitive engagement indicated that difference in mean scores of experimental group ($M=79.89$, $SD=3.100$) and control group ($M=49.20$, $SD=4.566$) was taken as significant at $p < 0.05$. It means that experimental group had notably and considerably high scores than the scores of control group on posttest of cognitive engagement.

Cognitive engagement is considered vital construct to be focused during the teaching learning process. Consequently, it was said that TAI method of proved much better for English teaching and learning than traditional method. Cooperative learning made students persevered, active and inventive to complete their educational and social culminations. The findings of the present study also suggest that cognitive engagement can also be improved through small-group cooperative interface among peers in a supportive and stress-free atmosphere. The results of the present study are similar with Sulaiman and Thakur (2022) and Kim (2013) who elaborated that cooperative learning facilitates students to build up relation among students and grow their cognitive level. Team Assisted Individualization (TAI) method of cooperative learning proved positive to accelerate cognitive engagement. It removed hesitation because students had to initiate and to perform their activities for completion. Responsibility in students was also regulated. It enhanced memorizing and cognitive engagement. Attention was also observed to be increased. In cooperative learning freedom and contentment were parasitized by the students. Pandya (2011) stated that students' engagement was effectively increased. Cooperative learning had strong effect on achievement, cognitive activities and retention. Cooperative learning improved students' engagement. It also removed the difficulties of teachers. Cognitive engagement was highly heightened. Findings of the study were also supported by the different researchers and cognitive engagement was significantly enhanced and accelerated (Liu et al, 2018). Nevertheless, it is required for comprehending the part of tutor efficiency in using of cooperative learning and increasing students' cognitive engagement. Furthermore, team of students in cooperative learning feel independence and also responsible for their acts and they enjoy their learning in fear reducing environment. Cooperative learning groups can give possibly appreciated learning chances and prospects, but teachers' consciousness is needed to apply the cooperative learning. Ordinarily implementation one of the cooperative learning techniques may not essentially endorse profound assignation. Learners are improbable to engage completely in cooperative learning if it is eloquent and persuasive to students and individuals that are not intrinsically inspired this might indicate obviously guarantee in arrangement between cooperative learning actions and evaluation norms. Instructors also essentially devote time in careful explanation of the purpose and determination of cooperative learning and challenging out sets of higher-level teaching. At this level the teaching is the inactive diffusion of learning material from instructor to student. Students were most actively engaged through cooperative learning other than any method of instruction. They greatly appreciated prospects for fetching in lectures through cooperative learning activities (Cavanagh, 2011). Learners want the instructor by taking larger regulation in class. Whereas some students need the teacher to lead better conversation, others may desire the teacher to lecture rather than only having to attend to the explanations from fellows. Learners have been seemed to involve more dynamically in conversation, still, this may not inevitably suggest that cooperative learning enlarged their development in cognition. Low level of students' engagement may be caused

various problems. The findings of the present study provide suggestion that cooperative learning methods, if labored on students properly, add meaningfully to the development of cognitive engagement among students. Resultantly it was indicated that learners engaged in cooperative learning are more possibly to develop a tendency to engage in the intellectual process and will adore the challenge of intellectuality, which will possibly influence them during their subsists. Higher scores on cognitive engagement scale are related to great educational accomplishment, better evidence dispensation as well as thoroughness and greater ingenuousness to new practices. Since cooperative learning is taken a good exercise in substantial education, the results of the present study may deliver provision for the discussion that substantial education supports significant consequences related to intellectual dispensation and is thus a valued and distinguishing characteristic of secondary education. Teachers who use cooperative learning practices are helping to advance cognitive thinking expertise which looks to be weakening among college students. The long-term reimbursements of students who adore cognitive dispensation are abundant. Particularly important is the level to which those who enjoy perception are greatly expected to contribute in the self-governing procedure and be subsidizing followers of social process. For cooperative learning to be active, learners should trust on each other, with the consideration that each student is mandatory to subsidize towards inclusive group achievement. Students who involve in cooperative learning shape faith and mature sense of obligation to other group members. Group interdependence may be more stimulating to create in the accessible delivery situation where learners do not interrelate face-to-face. As students learn to adore engaging in cognitive doings, they develop enduring behaviors that lead to more precarious, creative and involved in great sense of nationality, which is needed more than ever. To meet the changing needs of higher education, teachers should appreciate a teaching technique that helps individuals in developing curiosity in educational process.

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