GKU Journal of Multidisciplinary Research (GKUJMR)

An Analysis of Cooperative learning methods in Education with Gender-Based Achievement

[1] Ms. Shailja

[1] Asst. Prof. Apex College of Education, Bidhai-Khera (Tohana), Fatehabad.

Email: [1] shailjathakral@gmail.com

Accepted: 26.11.2025 Published: 26.12.2025 DOI: 10.5281/zenodo.18113631

Abstract – The present study aims to investigate Cooperative Learning methods in boys and Girls at the secondary level. The yearly Exam Results will be used to divide the sample of Students into equal groups. The division will ensure that both groups are Comparable in terms of academic performance before the implementation of different teaching methods. The former method was applied for first group and the latter for second group. Nevertheless, it is important to recognize the limitations of this study (e.g., regional focus, self-reported measures). There are also opportunities for future research to extend beyond the discussion of these relationships at work and across different contexts, using mixed-method designs to provide a more complete assessment of them.

KEYWORDS: Cooperative Learning Methods, Gender-Based Achievement, Secondary School Students

I. INTRODUCTION:

Cooperative learning Strategies: Studying K-12 cooperative learning strategies in which students work together to meet mutual goals and hold each other accountable yields large effect sizes (Ellis, 2001b; Rohrbeck et al., 2003; Slavin, 1995a) span across all types of schools from second through twelfth grades (Slavin, Hurley, & Chamberlain, 2003). Furthermore, well-planned methods are more effective in terms of technological group teaching as well (Lou, Abrami & d'Apollonia, 2001). These findings apply to all the subjects and grade levels, from rote memorization to higher-level analytical thinking (Qin et al., 1995). Cooperative learning approaches are generally employed for shorter segments of the school year (Antil, Jenkins, Wayne and Vadasy, 1998), but one study found students in schools that used cooperative learning techniques across almost all subjects in each part of the day over a 2-year period outperformed those in more traditionally structured schools (Stevens & Slavin, 1995b). Children performing low in special education and high-achieving children benefitted most from these changes compared to children with similar performance levels in the control condition. Collaborative group learning effects both male and female students in the same way it affects high performers and the average student (Slavin, 1995a). Boykin (1994), Calderón et al. (1998), Hurley's (2000), and Slavin, Hurley, and Chamberlain's (2003) results indicate that these strategies were also more effective for Latino and African American students. Younger, city dwelling, low-income and minority students benefited the most from PBL, as found in a study by Rohrbeck et al. (2003). In accordance with Chapman (2001), Klein and Schnackenberg (2000), Slavin (1995) and Slavin et al. (2003) that less structured forms of cooperative learning, without the use of group goals and individual accountability, rarely enhance student achievement.

Students are involved in many instructional strategies within "cooperative learning" as they work on a common project in heterogeneous, small groups. Jigsaw technique, Think-Pair-Share, Group Investigation, Team-Games-Tournament (TGT), Student Team Achievement Divisions (STAD) etc are some of the strategies. Through these techniques, students actively engage in the process of support and cooperation and are empowered to take responsibility for their behavior. For example, Jigsaw – each student is allocated a specific part of the topic to learn and teach back to the group so, together, everyone fills in their knowledge gaps. But STAD promotes mutual dependence and motivation in ability groups of varying expertise; achievement is credited to the student's own progress.

II. GENDER-BASED ACHIEVEMENT

Refers to the sex-gap in achievement (i.e. how males and females achieve) - often used to describe differences such as boys doing better in exams than girls in SES and science, whilst girls overall out-perform boys at school. These disparities may be due to a variety of causes including non-cognitive skills, teacher and peer responses as well as societal expectations that have traditionally encouraged men to engage in public life or some academic programmes.

III. NEED OF THE STUDY

In the development and comparison of cooperative learning methods, studies with a gender-based achievement analysis for educational approaches and for the fight against exclusion within classrooms would become important. The findings in this study will contribute to our understanding of how cooperative learning activities might be adapted for the processing needs of students consistent with their gender. With increased focus on student skills for collaboration in educational systems, knowledge of gender-influenced responses will enable teachers to create

healthier, more equality classrooms. In the future, the findings of this study will aid curriculum developers, teachers, and policymakers in identifying the most effective cooperative learning models that will support both male and female learners. It will also highlight any existing achievement disparities and suggest ways to reduce them, contributing to a more just and performance-driven education system. In addition, this research will promote the use of pedagogical strategies that train students in the development of communication, teamwork and peer support skills necessary for their professional conduct a social life. Through an investigation of gender-biased achievement, the research will highlight the need for inclusive pedagogical approaches and create opportunities for additional research within educational equity. Overall, it will serve as a guiding framework for future educational innovation and gender-responsive pedagogy.

IV. Literature Review

Bahrun, Bahrun et al., (2022) It is well-documented that female students experience differing learning outcomes at secondary and tertiary institutions. This research delves into the ideas of exceptional students from several Aceh Province institutions from the view point of a gender model approach to academic success. To find out how 400 outstanding participants felt about their own learning development, we analyzed interview data. To conclude our research, we used a gender approach model to causally interpret interview evidence and literature reviews to determine which factors are most decisive for female student achievement. These factors include behavior, interests, motivation, personalization, consistency, and external support, all of which are non-cognitive aspects of education that contribute to gender differences in educational outcomes. This discovery demonstrates how gender-based policies may help eliminate the gender gap, and also highlights the need of giving policy solutions careful consideration. The study's findings should contribute significantly to academic discourse, policy-making, and future research on how to boost female students' performance in higher education. Women will be able to use the successes as an example to become more effective social workers.

García-Taibo, Olalla et al., (2021) In order to provide a welcoming, equal, and varied learning environment, coeducation is crucial in university settings. Consequently, cooperative learning has the potential to greatly contribute to the advancement of coeducation by encouraging students of both sexes to work together, communicate effectively, and get a deeper knowledge of one another. Therefore, this research set out to determine if and how cooperative learning influenced students' levels of gender equality and their ability to work together effectively. The research used a quantitative pre- and post-test design using an experimental approach. Sixty kids in the second grade of Sport Sciences were divided into two groups: the control group and the experimental group. The students' ages ranged from 19.97 to 1.21 years, and there were 30 males and 30 females in the study. Both sets of participants were given the CEIG and the ACOES surveys to fill out before and after the intervention, respectively, to assess their level of competence in gender equality education. The experimental group took part in seven volleyball classes taught using a technique based on cooperative learning, with a focus on the Jigsaw method—which guaranteed that teams would be composed of players of both sexes. Verifying the intervention's intergroup impact was done using a Mann-Whitney U test. Two of the three CEIG dimensions and five of the seven ACOES dimensions showed statistically significant improvements for the experimental group. Using the Jigsaw approach and mixed- gender teams to teach group sports like volleyball in a cooperative setting greatly helps advance gender parity in the classroom and improves students' abilities to work together as a team.

Prieto Saborit, Jose et al., (2021) Sustainable development goals often include education and gender equality at the top, but several studies have shown that these targets are still very far off. The purpose of this essay was to look at the gender gap in maths and the effects of cooperative learning on students' grades. A total of 14,122 students, ranging in age from ten to nineteen, were a part of the study. It was hypothesized that classes with a greater degree of cooperative learning implementation would see a substantial reduction in the gender inequalities reported in math. Gender has a beneficial effect on math outcomes (estimated beta = 0.12, $p < 0.01$) and interacts negatively (−0.26) with cooperative learning, according to the findings of the regression of means and gradients analysis, which also has a critical value less than 0.05. To rephrase, the correlation between group projects and improved math scores is far stronger for boys than girls. Nonetheless, there is some equality since women do better academically. These findings demonstrate that gender disparities in math learning may be mitigated by cooperative learning.

Rudmann, Ocyna et al., (2021) the capacity to quickly adjust to new situations is crucial for young people in today's ever-changing and uncertain work environment. Because of this flexibility, it is essential that students learn important social abilities in the classroom, such as how to work together effectively

and solve problems. There is a persistent gender discrepancy in this domain, with females displaying more social abilities than boys. The Profane project was a large-scale longitudinal study that included many labs around France and involved over 10,000 students from vocational high schools. The students' social competences and other psychological/psychosocial characteristics at vocational high schools were to be the main target for designing and evaluating the intervention. A jigsaw classroom, a form of cooperative learning that focuses on positive goal and resource interdependence, was one of three conditions examined in this two-year, three-wave field experiment. Cooperation with and without resource independence, as well as business as usual were the other two. By contrasting the three approaches to education, this study examines how girls' and boys' perceptions of their own social competencies change throughout the course of their teenage years. Longitudinal multilevel modeling results confirm and demonstrate an expanding gender disparity in perceived social competencies. The jigsaw condition showed that girls' and boys' views of social competencies evolved similarly over time, while the two control circumstances how edafar wider gender disparity, according to the analysis. This section discusses the contributions to our knowledge of how social competencies are developed and taught in educational contexts.

Mahenge, Anagrolia et al., (2021) Examining how a cooperative learning strategy affects gender equality and academic performance in elementary school children is the goal of this research. Three hundred eleven- and twelve-year-old sixth graders took part in the study. Both sexes did well on the examinations, and the results demonstrated that there was less of a gender gap in English classes when students worked together. According to the research, gender-neutral classrooms may benefit from a cooperative learning method that raises performance regardless of students' biological gender.

Puiggali, Joan et al., (2021) this paper takes a quantitative and qualitative look at how gender-neutral groups of future educators in both mixed-and homogeneous cooperative learning environments value personal accountability, constructive dialogue, and mutual support. During the 2022–2023 school year, the research was conducted. Five hundred thirty-five undergraduates enrolled in the Elementary, Secondary, and Kindergarten Education programs at the University of Gerona's Faculty of Education and Psychology (FEP) were the subjects of this research. The research used the CAC instrument, which consisted of 20 items, coupled with an additional 11 items. The results showed that when individuals were in groups with similar characteristics, they performed better across the board in terms of cooperative learning. In all forms of cooperative structure, female students out performed male and non-binary students across the board when it came to cooperative learning. Female students placed a larger importance on individual responsibility in both contexts, while non-binary people placed the lowest value on it. When collaborating with peers from different backgrounds, male students placed a greater emphasis on personal accountability. When asked about their responsibilities in completing cooperative tasks, the majority of students said they remained the same. Having said that, women made up the bulk of those who felt their role changed. The research reveals that pre- service teachers of various gender identities and expressions are just as gregarious as one another, but that their social skill development is distinct. Therefore, diversity in educational institutions should be considered as a factor that affects the growth and success of college students in the future.

Slit, Edgar. (2021) in recent years, cooperative learning has become more popular as a method of enhancing student success in the classroom. By combining information from many published studies that fulfilled our inclusion criteria, we looked at how cooperative learning affected students' academic performance in our meta-analysis. Results from the 35 research that were considered indicated that cooperative learning significantly improved students' academic performance. Cooperative learning is a powerful tool for raising students' academic performance, as shown by the modest impact size. Incorporating cooperative learning into instructional methods is suggested by educators, according to this study's results, which have significant consequences for theory, practice, and policy. The inclusion of papers with varying degrees of quality and the potential for publication bias are two of the limitations of this meta-analysis that must be considered. To overcome these constraints and investigate the possible advantages of cooperative learning in various settings and with diverse populations, further study is required.

Gillies, Robyn. (2016) From elementary school all the way up to college and beyond, and in a broad variety of subjects, cooperative learning has long been acknowledged as an effective method of instruction. In it, students collaborate in groups to accomplish objectives or finish assignments that they couldn't do on their own. Through a survey of current literature and practical application, this study seeks to identify the factors that enhance cooperative learning. The review

zeroes emphasis on the factors that make it work, as well as the function that instructors play in helping students think and learn better when they utilize this strategy in the classroom.

V. Research Methodology

Anything that will be performed, whether broad or narrow in scope, will be considered part of the research methodology. The research process will include several key steps: identifying the problem, reviewing relevant literature, developing and testing hypotheses, selecting an appropriate study methodology, analyzing the collected data, interpreting the results, and drawing conclusions. Each of these steps will be rigorously pursued to ensure that the research is comprehensive, precise and significant.

First, the sample of students is split according to their yearly exam results in two equal subsamples. This stratification will ensure comparability of both treatment and control groups with respect to educational performance before the intervention of teaching methods starts.

- Traditional Method -First Group
- Experimental Method-Second Group

Ninth-grade students of Haryana State will be enrolled in the study by researcher. Thus, students studying in the ninth grades at secondary schools from the academic year (2021–22) are considered as study population.

Class A will be designated as the Control Group based on the percentage of total marks from the previous year's exam, while Class B will be identified as the Experimental Group. Out of a total of eighty students, forty will be selected for each group.

VI. Limitations of the Study

The study will have certain limitations that may affect the generalize ability and scope of its findings. A main limitation will be the reliance on a single educational context (e.g., region, type of school, and degree level). This implies that our findings may not generalize to all student populations. Further research will be necessary to verify the findings in richer and more varied learning situations. Another limitation will be the inconsistency with which cooperative learning techniques are implemented across teachers. Even though there are uniform recommendations, different teaching methods, organization skills of the class and students atmosphere will determine how these strategies could benefit. Furthermore, the academics will be the main measure in our research, since it is possible that they are not complete and do not include creativity, critical thinking and emotional intelligence. Gender analysis itself will also be difficult, as data is likely to primarily take the form of binary gender classification and may overlook experiences of non-binary or gender-diverse students. In addition, short-term measures would impose another limitation because the long-term effect of cooperative learning will not be completely reflected in this academic year. To get informed on these restrictions will recommend the opportunity of further and more developed research work.

VII. Results and Discussions

As seen in the effectiveness of these approaches, cooperative learning strategies are often effective when compared to traditional lecture methods. Cooperative learning When working in cooperative versus competitive environments, students are found to achieve significantly higher scores on achievement tests, retain information longer after the tasks have been completed, demonstrate better problem-solving strategies (Eggen & Kauchak, 2004), and exhibit more positive attitudes towards in class cooperation. Positive Interdependence the fundamental elements of positive interdependence imply that students recognize that “one person’s effort helps another, and one student’s success is related to the other students’ successes.

Such social interaction not only has positive effects on cognitive results, but also for social and emotional development. Yet as cooperative learning models become more popular, there is increased interest in their effects on various student populations such as girls' achievement. Some research work has also focused on examining why boys and girls seem to, or do not, benefit the same from cooperative group learning and how gender-typing differences in communication patterns, motivation and cognitive styles influence nurtured learning. The results are somewhat inconsistent; although cooperative learning is generally effective, it has different effects for reasons of the gendered structure of a group or classroom. There is some evidence to suggest that girls frequently out per form boys in cooperative learning settings, particularly for language arts and social science subjects. This tendency for girls to be more communicative, accommodating and empathetic is vital in effective group work. These social skills may also set them apart from other individuals when participating in collaborative activities, which often comprise listening to others’ ideas, supporting peers and negotiating ideas. Moreover, girls may demonstrate greater commitment to collective responsibility and peer support, which is reflected in higher group cohesion and academic outcomes.

In contrast, young men may prefer heads up or do-it-yourself learning where their performance is assessed as an individual, not a team member. This predilection sometimes results in being withdrawal or domination in group environments. Some research suggests that boys may tend to either withdraw or dominate group interactions and, if they do so in group discussions which could disrupt this balance. They are therefore academically underachieving, children and their academic standard in group situations does not take into account of their potential. When it is organised appropriately, co-operative learning still provides a gateway for boys to develop friendships, empathy and respect, as well as the desire to work with others. In order to deal with these gender inequalities teachers, need to be aware of the composition and dynamics of groups. Formal mechanisms in the form of gender-matched groups, rotating leadership and clear guidelines for participation can help ensure equal contribution from all. Teachers should also learn how to identify and address behaviors associated with gender that inhibit group effectiveness. For example, scaffolding quiet students, be they boy or girl and facilitating louder voices can enhance the learning environment by ensuring all students feel respected and heard.

VIII. CONCLUSION

From the result of the studies that have been reviewed, where boys have traditionally outperformed girls in many regions, cooperative learning methods have been shown to narrow the achievement gap. Group-based problem-solving and peer tutoring noble students to explain concepts in simpler terms, thereby enhancing understanding for all members. Girls, in particular, benefit from the supportive environment of cooperative learning, which may reduce anxiety and boost confidence in STEM subjects. This collaborative approach can play a significant role in encouraging more female students to pursue higher education and careers in science and technology fields.

REFERENCES

[1] Eslit, Edgar. (2021). Effects of Cooperative Learning on Student Achievement: A Meta-Analysis of Randomized Controlled Trials. 4. 19.

[2] Achor, Emmanuel & Wude, Musa & Duguryil, Zipporah. (2013). Do Cooperative Learning Strategies have the Potentials to Eliminate Gender Difference in Students' Achievement in Biology? The Effect of STAD and Jigsaw Cooperative Strategies. 10. 136-146.

[3] Gillies, Robyn. (2016). Cooperative Learning: Review of Research and Practice. Australian Journal of Teacher Education. 41. 39-54. 10.14221/ajte.2016v41n3.3.

[4] Puiggali, Joan & Tesouro, Montse & Cañabate, Dolors & Colomer, Jordi. (2021). Fostering Perceptions of Gender through Cooperative Learning. Education Sciences. 13. 976. 10.3390/educsci13100976.

[5] Min, Wang. (2012). Effects of Cooperative Learning on Achievement Motivation of Female University Students. Asian Social Science. 8. 108-108. 10.5539/ass.v8n15p108.

[6] Shrivastava, U., & Verma, J. K. (2021, December). A study on 5G technology and its applications in telecommunications. In 2021 International Conference on Computational Performance Evaluation (ComPE) (pp. 365-371). IEEE.

[7] Singh, H. and Laxmi, V. and Malik, A., (2019), "Performance Analysis of Various Congestion Control Schemes in VANET", Communications in Computer and Information Science, Vol 1076, pp 231-239.

[8] Mahenge, Anagrolia & Cheema, Guneet & Marcus, Marcus. (2021). Cooperative Learning Approach Perspective in Gender Equality: Primary School Students in Dodoma, Tanzania. 10.4018/979-8-3693-3264-1.ch016.

[9] Kumar, R. K. (2025). Transforming student evaluation and feedback through AI-driven automated assessment. International Journal for Multidisciplinary Research, 7(2). https://doi.org/10.36948/ijfmr.2025.v07i02.42212

[10] Rudmann, Ocyna & Batruch, Anatolia & Visintin, Emilio & Sommet, Nicolas & Bressoux, Pascal & Darnon, Céline & Bouet, Marinette & Bressan, Marco &Brown,Genavee & Cepeda,Carlos & Cherbonnier,Anthony & Demolliens, Marie & de Place, Anne-Laure & Desrichard, Olivier & Ducros, Théo & Goron, Luc & Hémon, Brivael & Huguet, Pascal & Jamet, Éric & Butera, Fabrizio. (2021). Cooperative Learning Reduces the Gender Gap in Perceived Social Competences: A Large-Scale Nationwide Longitudinal Experiment. Journal of Educational Psychology. 116. 10.1037/edu0000870.