Enhancing Learning Outcomes: The Impact of Competition on Slow Learners' Engagement and Academic Performance

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Abstract— **The classroom management plays a crucial role in enhancing students' understanding and engagement. This study introduces "Learning by Competing," a novel approach aimed at involving slow learners—students with below-average cognitive abilities who often remain passive during classroom activities. The method was implemented in a classroom of 30 students enrolled in a Textile Technology elective course, known for its challenging and theoretical content. The approach involves dividing the class into heterogeneous groups, with slow learners assigned as group leaders. These leaders, along with their groups, actively participate in a structured competition, which involves data collection, discussion, and presentation. The competitive environment fosters engagement, listening, and responsibility among all students, particularly motivating slow learners to take on leadership roles. Results demonstrate that this method significantly improved students' understanding, with a 30% increase in average marks between two-unit tests and ESE by 15 %. This approach effectively transforms slow learners into active participants, thereby enhancing the overall learning experience.**

Keywords—**Slow learners, competitions, activity, presentation, active learning, participation.**

ICTIEE **Track***: Pedology of teaching and learning*

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I. INTRODUCTION

In the field of education, one of the most persistent challenges is catering to the diverse learning abilities of students within a classroom. Among these students, slow learners—those who struggle to keep up with the pace of conventional teaching but do not qualify as having learning disabilities—pose a unique challenge. Slow learners are often characterized by their lack of outward interest in classroom activities and their difficulty in grasping abstract or theoretical concepts. Despite possessing the potential to understand and succeed, they frequently become passive participants in the learning process, leading to underperformance and disengagement.

Instructors face the dual challenge of recognizing the needs of slow learners and devising strategies that integrate these students into the mainstream learning environment. Traditional teaching methods, which often rely on lecturing and rote memorization, can be particularly ineffective for these students. As a result, there is a growing demand for innovative teaching methods that actively involve all students, especially those who are less likely to participate voluntarily.

One promising approach is the concept of "Learning by Competing," where students learn through structured competition within the classroom. This method capitalizes on the natural motivation that competition can foster, encouraging students to engage more deeply with the material. The underlying premise is that by transforming slow learners from passive observers into active participants and even leaders, their engagement and understanding can be significantly enhanced. Studies like Sebastian (2016) and Yadav & Poonia (2017) highlight how active learning strategies can motivate slow learners by fostering inclusivity and responsibility. Similarly, Singh & Kumar (2020) discuss how competition in classrooms boosts engagement, even among students with lower initial interest. These insights form a foundation for the "Learning by Competing" methodology, situating it within a broader educational context.

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This study was conducted in a classroom of 30 students enrolled in a Textile Technology elective course, a subject known for its conceptual and theoretical content. This course is often perceived as difficult by students, making it particularly challenging to maintain their attention and interest, especially for slow learners. The primary objective of his study was to explore the effectiveness of the "Learning by Competing" method in improving the engagement and academic performance of slow learners.

By assigning slow learners as group leaders in a competitive learning environment, the study aimed to determine whether their increased responsibility would lead to better understanding and higher levels of participation. The methodology involved dividing the class into heterogeneous groups, where slow learners were given leadership roles, thus requiring them to actively participate in discussions, data collection, and presentations. The results of this study are expected to shed light on how competitive learning can serve as a powerful tool to address the challenges faced by slow learners, ultimately contributing to improved academic outcomes for all students.

In summary, the introduction of the "Learning by Competing" approach aims to bridge the gap between active and passive learners, offering a platform where slow learners can showcase their potential while also benefiting from the collective knowledge and support of their peers. This paper discusses the methodology, implementation, and outcomes of this innovative approach, providing insights into how educators can foster a more inclusive and effective learning environment.

II. METHODOLOGY

The "Learning by Competing" methodology was designed to enhance classroom engagement, particularly focusing on slow learners. This approach was implemented in a Textile Technology elective course, which typically challenges students due to its conceptual and theoretical nature. The objective was to involve slow learners actively in the learning process by assigning them leadership roles within a competitive group setting. The methodology is structured to be completed within a single 60-minute lecture. Below is a detailed breakdown of each step involved in the process:

A. Group Formation

Instructor's Role: The instructor begins by dividing the entire class of 30 students into six heterogeneous groups. Each group comprises a mix of active learners and slow learners to ensure diversity in abilities and perspectives. The key to this step is to create balanced groups where slow learners are paired with peers who can provide support and collaboration.

Students' Role: The students must cooperate with the instructor's group assignments and prepare to engage in the upcoming activities. No student has the option to choose their group, ensuring that each group is mixed and inclusive. Effective management of group dynamics was crucial for the success of the competition. The instructor monitored group discussions to ensure inclusivity and mediated conflicts when necessary. Strategies included emphasizing respect for differing opinions, rotating roles within groups, and offering constructive feedback to prevent domination by active learners or marginalization of slow learners.

B. Assigning Group Leaders

Instructor's Role: In this step, the instructor assigns a group leader to each group. Importantly, the group leader selected is a slow learner. The rationale behind this decision is to push slow learners out of their comfort zones and encourage them to take on a more active role. By assigning leadership responsibilities to slow learners, the instructor ensures that they are compelled to participate and engage with the material.

Students' Role: The appointed group leaders must accept their roles and prepare to lead their respective groups through the upcoming activities. The other group members are expected to support and follow their leader, contributing to the group's collective effort.

C. Problem Statement and Rules Discussion

Instructor's Role: The instructor presents the problem statement, which typically involves a topic with multiple sub-points or parameters influencing a process. The instructor clearly explains the rules, expectations, and objectives of the competition. The problem should be designed to require data collection, analysis, and synthesis, thus encouraging deep engagement with the content.

Students' Role: During this phase, students listen attentively to understand the problem and the rules. Their focus is on grasping the task at hand, which is crucial for their subsequent participation.

D.. Individual Learning and Data Collection

Instructor's Role: The instructor monitors the students' progress while they work individually to gather information related to the problem. The instructor also evaluates the students' efforts, ensuring that each student contributes meaningfully to the task. During this phase, the instructor provides guidance and support as needed but refrains from direct intervention to encourage independent learning.

Students' Role: Each student independently searches for data or sub-points relevant to the problem statement within a specified time frame (e.g., 20 minutes). This task pushes them to actively engage with the content, rather than passively receiving information.

E. Combining Lists and Group Discussion

Instructor's Role: The instructor continues to monitor the group activities, ensuring that discussions remain focused and productive. Evaluation during this phase includes observing how well the group leader synthesizes individual contributions and leads the discussion.

Students' Role: The group leader collects the information gathered by all group members and compiles it into a comprehensive list. Following this, the group engages in a discussion to refine and expand the list, ensuring that all relevant points are included. This collaborative process reinforces the learning objectives and encourages deeper understanding.

F. Group Leader Presentation

Instructor's Role: The instructor evaluates the presentations delivered by the group leaders. The focus here is on the clarity, accuracy, and comprehensiveness of the content presented, as well as the leader's ability to communicate effectively.

Students' Role: The group leader presents the compiled list to the entire class. This presentation requires the slow learner, who serves as the group leader, to actively engage with the material and demonstrate their understanding. The other students listen carefully and may ask questions or provide feedback, fostering an interactive learning environment. Group leaders were evaluated based on specific criteria, including:

- Clarity: How well the leader articulated their group's findings.
- Engagement: Encouraging participation from all members during discussions.
- Accuracy: The correctness and depth of the information presented.
- Leadership Quality: Handling group dynamics, resolving conflicts, and ensuring equal contribution from members.

G. Final Presentation and Evaluation

Instructor's Role: The instructor reviews all the lists submitted by the group leaders and cross-verifies the content. Following this, the group with the most comprehensive and accurate list is selected to give a final presentation. The instructor then evaluates the presentation and awards a bonus mark for internal evaluation to the winning group.

Students' Role: During the final presentation, the selected group presents their findings to the class. Other students are encouraged to ask questions, which promotes critical thinking and further discussion. The competitive element of this activity ensures that all students are invested in the outcome, as they collectively aim for their group's success.

TABLE I
ROLES AND RESPONSIBILITIES SUMMARY

Step	Instructor's Responsibility	Students Responsibility
Group Formation	Divide class into groups	Act accordingly
Assigning Leader	Select group leader	-
Problem Statement	State the problem and explain rules	Listen and understand the problem
Individual Learning	Monitor and evaluate progress	Collect data and engage with content
Combining Lists & Discussion	Monitor and evaluate group discussion	Group leader compiles lists; group discusses points
Group Leader Presentation	Evaluate presentation quality	Present list (leader); listen and ask questions (peers)
Final Presentation & Evaluation	Cross-verify content and evaluate final presentations	Present (winning group); listen and engage (all students)

III. RESULTS AND DISCUSSION

The "Learning by Competing" methodology was applied in a classroom of 30 students enrolled in a Textile Technology elective course. The primary focus was on improving the engagement and academic performance of slow learners by assigning them leadership roles in a competitive group environment. The effectiveness of this approach was evaluated based on several criteria, including student engagement, understanding of content, and improvement in academic performance. The results are discussed in detail below, with additional analysis provided through a flowchart and other visual tools to illustrate the process and outcomes.

A. Improved Engagement of Students in Class

Observation: The introduction of a competitive environment significantly increased the engagement levels of students. All students, regardless of their previous level of participation, were motivated to contribute to their group's success. The competitive nature of the activity created a sense of urgency and responsibility, driving students to remain focused throughout the lecture.

Analysis: Slow learners, who typically remain passive, were particularly impacted by this method. As group leaders, they were required to take charge, which not only increased their participation but also boosted their confidence.
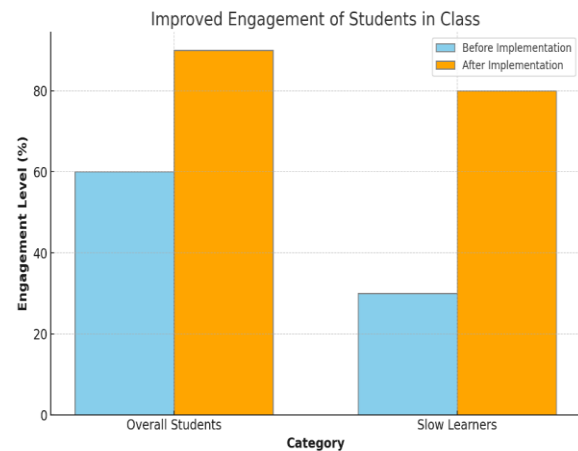

Fig. 1. Improved engagement of students in class

Here is the bar chart representing the increase in student engagement levels before and after the implementation of the "Learning by Competing" method. The chart shows a significant improvement in overall student engagement, with a particularly notable increase among slow learners.

B. Encourages Listening and Involvement

Observation: The structure of the activity ensured that every student had an essential role to play. Group members had to listen to each other's contributions, leading to collaborative learning. This not only encouraged active listening but also fostered a deeper understanding of the material.

Analysis: By assigning slow learners as group leaders, the activity naturally encouraged them to listen more attentively to their peers and engage in meaningful discussions. This collaborative approach resulted in better retention of information.

Here's the flowchart depicting the flow of information and communication within the groups, highlighting the role of the group leader (slow learner) in synthesizing and presenting the data. The chart shows how group members contribute

information to the leader, who then presents it. This visual representation aligns with the idea of encouraging listening and involvement in the group activity.
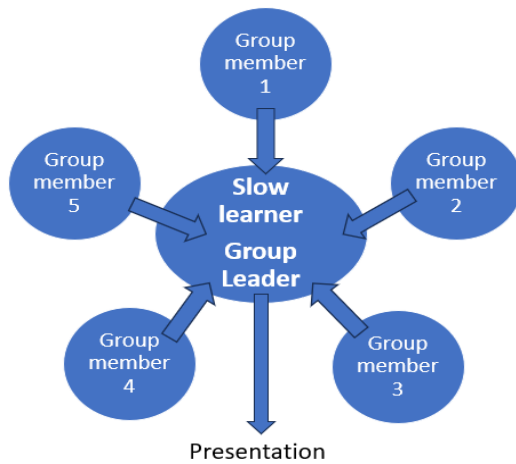

Fig. 2. Presentation process

C. Better Understanding of the Students

Observation: The process of searching for information, discussing it within the group, and then presenting it to the class enhanced the students' understanding of the theoretical content. Students were not just passive recipients of information but active participants in the learning process.

Analysis: The competition required students to critically engage with the material, which led to better comprehension and retention. The slow learners, in particular, benefited from the responsibility of leadership, which necessitated a deeper understanding of the content to effectively lead their group.

D. Motivation for Slow Learners

Observation: Slow learners, often seen as neutral elements in traditional settings, were motivated to perform at their highest level due to their new leadership roles. The prospect of leading a group and the competitive element motivated them to engage actively with the content.

Analysis: This result aligns with the main objective of the study. The slow learners were no longer passive but were at the forefront, leading discussions, and presenting findings. The competitive aspect provided additional motivation, which translated into improved academic performance.

Here is a pie chart illustrating the participation of slow learners before and after the leadership intervention. The chart shows a significant increase in active participation after the intervention, indicating the positive impact of leadership roles and competitive elements on their engagement.

Responsibility Towards Group Performance

Observation: The competitive environment instilled a sense of responsibility in all students. They recognized that their individual performance would directly affect the group's success. This shared responsibility motivated even the most passive students to contribute actively.

Analysis: The competition fostered a sense of accountability, where every student felt responsible for their group's success. This responsibility drove them to engage more deeply with the content, resulting in better overall performance.
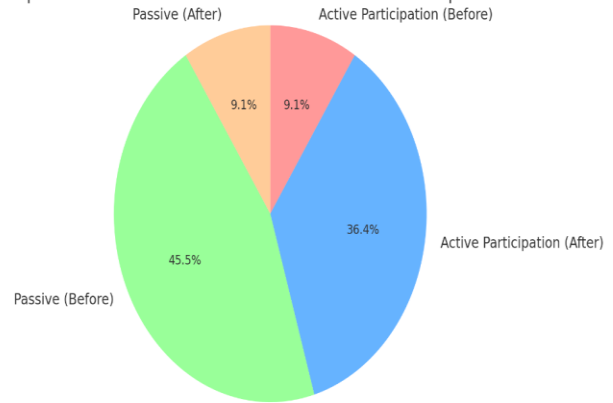

Fig. 3. Participation of slow learners before and after activity

Here's a responsibility matrix that visualizes the roles and contributions of each group member before and after the leadership intervention. The heatmap shows how the competitive environment increased the sense of responsibility among students, leading to more active participation and contribution to the group's success.
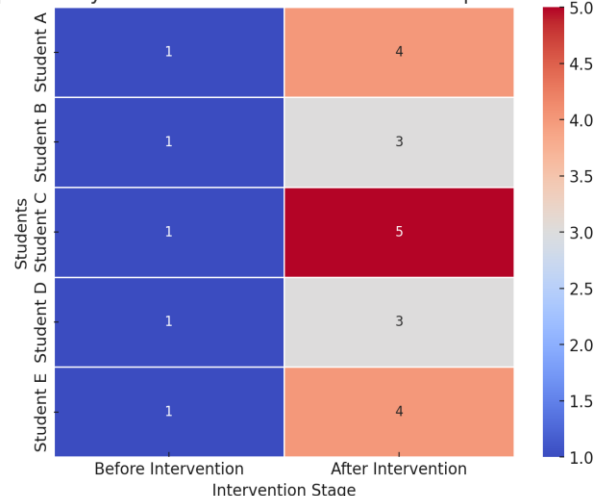

Fig. 4. Responsibility matrix

E. Academic Performance Improvement

Observation: A significant improvement in academic performance was noted after implementing the "Learning by Competing" method. The average theory marks of students in Unit Test 2 (UT2) were 30% higher than in Unit Test 1 (UT1). Additionally, the average End Semester Exam (ESE) marks increased by 15% compared to the previous year. This improvement was particularly noticeable among slow learners, who showed marked progress.

Analysis: The competitive and collaborative learning environment not only engaged students but also deepened their understanding, leading to better academic outcomes. The slow learners, in particular, benefited from the increased responsibility and engagement, resulting in higher scores.

Here is a line graph that compares the average marks of students in Unit Test 1 (UT1), Unit Test 2 (UT2), and the End Semester Exam (ESE). The graph highlights the improvement

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in overall average marks and the significant progress made by slow learners.

A paired t-test was conducted to compare student performance in Unit Test 1 (UT1) and Unit Test 2 (UT2). The results showed a statistically significant improvement ($p < 0.05$), confirming the effectiveness of the methodology. The effect size was calculated to be 0.6, indicating a moderate to strong impact on academic performance. While the competitive environment generally fostered positive outcomes, there is a potential risk of slow learners developing an inferiority complex. To mitigate this, instructors provided individualized support, emphasized the importance of effort over results, and recognized contributions from all students. Peer encouragement and regular constructive feedback were integral to creating a supportive atmosphere.
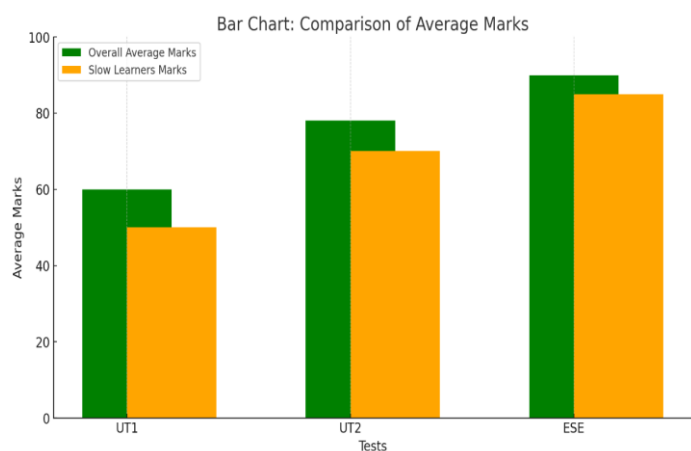

Fig.5. Comparison of average marks of UT1 UT2 and ESE

The approach has few limitations:
- Scalability: Implementing this method in larger classes might require additional resources.
- Instructor Dependency: The success of this approach heavily depends on the instructor's ability to manage group dynamics.

Future work could involve developing digital tools to assist with group management and exploring adaptations for diverse classroom environments.

CONCLUSIONS

The "Learning by Competing" method introduced a dynamic approach to classroom instruction, significantly enhancing student participation and academic outcomes. By fostering a competitive environment, the method increased engagement among typically disengaged students and empowered slow learners to take on leadership roles. This shift from passive to active learning led to improved comprehension and retention, with students demonstrating a deeper understanding of theoretical concepts. The method's effectiveness is evidenced by a 30% improvement in average theory marks from Unit Test 1 to Unit Test 2. These findings highlight the potential of competitive learning strategies to boost both individual and overall academic performance. Beyond immediate academic gains, the "Learning by Competing" approach holds the potential to instill confidence and collaborative skills in slow learners. These attributes may positively influence their future learning experiences, professional teamwork capabilities, and overall attitude toward education. Further longitudinal studies are recommended to assess these long-term impacts.

1. The "Learning by Competing" method led to increased active participation from all students, including those who are typically less engaged.
2. Slow learners, previously neutral in classroom activities, were significantly more involved due to their role as group leaders.
3. The competitive environment fostered greater student engagement and motivation, enhancing overall class participation.
4. Students demonstrated a better understanding of the material as they actively collected, discussed, and presented information.
5. The method resulted in a 30% improvement in average theory marks from Unit Test 1 to Unit Test 2, indicating more effective grasp of theoretical content.
6. Overall, the strategy proved effective in boosting the academic performance of slow learners and improving class-wide understanding.

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