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Research Article

Assessing and Improving Collaborative Learning Practices Among Fourth-Year Physics Students at Wolkite University

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Abstract

This study investigates the factors that affect the participation of fourth-year Physics students at Wolkite University in team-based academic activities.Collaborative learning is an essential skill in higher education, particularly in scientific disciplines like Physics, where collaborative problem-solving and shared responsibilities are crucial. A mixed-methods approach was used, combining quantitative data from structured questionnaires with qualitative insights from focus group discussions. The findings reveal several barriers to effective teamwork, including lack of motivation, unequal contribution among members, insufficient guidance on teamwork strategies, and limited instructor support. In addition, environmental constraints such as time management and resource availability also contributed to reduced engagement. Based on these findings, a series of intervention strategies were implemented, including training workshops, peer evaluation mechanisms, and enhanced instructor involvement. Post-intervention assessments showed notable improvement in student participation, communication, and task distribution. The study concludes that structured support and clear guidelines are critical in fostering meaningful and equitable participation in team activities. These findings have broader implications for curriculum development and instructional design aimed at enhancing collaborative learning.

Keywords

Teamwork, Participation, Motivation, Peer Evaluation Mentor

1. Introduction

1.1. Background of the Study

Team work is an educational mode that promotes learning and socialization among students [1–5]. The effects of learning in Teams are considerably improved when students receive well-structured. Team work experiences or when they are instructed in group work strategies [6]. [7, 8] also demonstrate the importance of social collaboration to promote learning.

One of the most challenging experiences that need intervention in a classroom is the issue of the students' participation in teamwork. Student collaborative projects have numerous advantages over more traditional classroom-based instruction for improved student learning. Students working cooperatively to achieve a common goal produce higher achievement and exhibit greater productivity than they do working alone [9, 10]. Collaborative work can lead to improvements in intrinsic motivation, enhanced persistence on the part of students when faced with adversity, and greater transferability of the knowledge and skills acquired through the collaborative learning experience [11, 12].

Students involved with collaborative project teams experience improved attitudes toward teamwork overall [13]. Students' communication skills, their problem-solving abilities, and their capability to work as effective members of a team, which de-

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velop and improve from collaborative learning activities, are all attributes highly valued by future employers [7, 8, 14–16].

However, there are so many problems for the withdrawal of student's participation in team work Such as "freeriding" in which one or more individual team members do not contribute their full potential, instead relying on the work of others to carry them through [7, 11, 12]. Another difficulty encountered by student learning teams is that of an individual student "hijacking," a situation in which a member takes complete control of an assignment and aggressively directs the activities of the other students while actively discouraging their participation in any form of decision making [7, 8].

The objective of improving team work participation is not to have every student participate at the same rate. In its place, it is to create a covenant environment in which all students have the opportunity to learn from each other. Some students will raise their voices more than others; this variation is a result of differences in learning preferences as well as differences in personalities. For example, some students who do not speak often in class are reflective learners, who typically develop ideas and questions in their minds before speaking; others are shy students who feel uncomfortable speaking in front of groups. Many students who frequently volunteer to contribute are active learners, who typically think while they speak [17, 18].

The teacher's goal here, then, is to create conditions that enable students of various learning preferences and personalities to contribute in teamwork. To reach this goal, the teacher will need to take extra steps to encourage quiet students to speak up and, occasionally, ask the more verbose students to hold back from commenting in order to give others a chance during group work discussion and presentation [5, 6].

1.2. Statement of the Problem

Effective teamwork is a critical aspect of the educational experience, particularly in technical disciplines such as Physics. At Wolkite University, the participation of second year Physics students during teamwork exercises has been observed to be inconsistent. While teamwork is vital for developing collaborative, problem-solving, and communication skills, several factors may be hindering full engagement from all team members. These factors include lack of motivation, differences in academic preparation, unclear role definitions, and inadequate facilitation of team dynamics.

As Physics is a highly specialized field requiring both technical expertise and collaborative efforts, it is crucial that students learn to effectively collaborate and contribute in a team setting. Failure to engage fully in team activities may negatively impact students' learning outcomes, as well as their preparedness for future professional environments where teamwork is paramount.

This study seeks to examine the barriers to effective participation among second year Physics students during teamwork and explore strategies to enhance their engagement and collaborative skills. By identifying the underlying causes of disengagement and proposing potential solutions, this research aims to improve the overall educational experience and better prepare students for the demands of the Physics industry.

1.3. Research Objectives

This research answered the following basic research questions that are listing below.

1) What are the factors that affect the participation of fourth-year Physics students in teamwork at Wolkite University?
2) What strategies can be implemented to enhance the motivation and participation of fourth-year Physics students during teamwork activities?
3) How effective are the implemented strategies in increasing fourth-year Physics students participation at Wolkite University?

1.4. Objectives of the Study

1.4.1. General Objectives

The aim of this study is to improve the participation of second year Physics students during teamwork at Wolkite University.

1.4.2. Specific Objectives

1) To identify the various factors that influence the level of participation in teamwork.
2) To implement interventions aimed at increasing engagement.
3) To assess the effectiveness of the interventions.

1.5. Significance of the Study

The findings of this action research will benefit students, instructors, and the department by improving team dynamics, enhancing student learning outcomes, and promoting the development of essential professional skills. It will also serve as a model for improving teamwork participation across other departments.

1.6. Delimitation of the Study

This research focuses on examining the participation of fourth year Physics students at Wolkite University during teamwork

activities. The reason behind selecting second-year biotechnology department students is that, students are relatively passive towards team-based activities and active learning techniques. The study takes about two months starting from march up-to may, 2017 E.C which encompasses proposal writing, data collection, and solution implementation and action evaluation. The study aims to identify the key factors that influence students' engagement in collaborative tasks, explore strategies to enhance their motivation, and assess the impact of improved teamwork participation on the teaching-learning experience.

1.7. Organization of the Study

The rest of this study is organized as follows. In section two, we present literature's related to our study. In section three, we discussed methodologies of this study. In section four analyzed, interpreted and discussed the results of this study. Finally, section five deals with conclusion and recommendation.

2. Literature Review

Throughout the process of the study, a number of various scholars' research reports, books and different writings were consulted. Among were the following; According to [9], one of the major drawbacks of students' participation in teamwork is the nature of the course level. He noted that most of the lesson contents that teachers prepare and present are not appropriate to the students' level of understanding. Thus, it is recommendable to consider the students' readiness and preparation aspect [8, 11–13] in this regard. This is actually consistent with the result of this study that shows that more of what teachers teach is moderately difficult, but never in a sense of its simple-complex arena.

Research also shows that a quarter of students in a classroom fear making mistakes [8–10] especially in asking/answering wrong questions/answers. Constantinople reported that the nature of the classroom size (the total number of students in a single classroom) also affects the students' participation level [8–14]. This is related to the result that indicates that students seating arrangement is poorly organized. This situation actually results into poor management of the classroom. A teacher cannot easily assess individual students since they are too many for him/her to assess. Poor seating arrangement is also an obstacle when a lesson or a test is administered because students may easily share their answers with their fellows during a test or they would not be able to stand on feet and face the teacher whenever they want to participate.

Another research also indicated that most students are less participate in teamwork simply because they fear other students, the teacher or they have low or no self-confidence to stand in front of their colleagues [4, 5, 8, 11, 12] also outlined a number of factors that may account for students' participation inn teamwork. Factors like students' proficiency in the language, students' preferred learning styles, students' personally traits, social and cultural expectations, the teacher's personality and rapport with the class, teacher's teaching style, students' gender, teacher's and students' perceptions of their roles and the importance of participation in group work in learning and teaching process.

3. Methodology

3.1. Description of Study Area

This study was conducted in Wolkite University. Wolkite University, is currently located at Centeral Ethiopia Regional State (CERS), Gurage Zone, 170 km South-West of Addis Ababa on the way to Jimma. Currently, the University offers Under Graduate, Post Graduate and opened PhD programs. In second year, Physics department students, there are 27 students among them 9 pupils are female and the rest are male.

3.2. Study Design and Period

Mixed research design [2, 3] was conduct from April 1 - April 30, 2025 for improving student's team work participation in case of fourth year Physics department students in 2017 E.C Academic year.

3.3. Study Populations

Participants are fourth year Physics students at Wolkite University, totaling 27 students divided into 5 teams, 3 have 5 members of each and the remaining two have 6 members. Out of these 27, 18 were males while the rest 9 were females.

3.4. Sample Size Determination

The target groups of this research were focused on fourth year Physics department students which are 27 in number. Based on the study mentioned under [10], a census (entire population as a sample) is attractive for small population (usually less than 200), we have taken the whole population/students as a sample since census eliminates sampling error and provides data on all the individuals in the population. The fourth year Physics students was selected due to their suitability for our action research project due to as mentioned on delimitation part,

most of we action researchers are Physics department and this simplify all activities and measurements /solutions those we implement to improve students participation.

3.5. Source of Data and Data Collection Method

Restricted questionnaire checklists was provided to the 27 students after the running of the group assignment presentation. Interview and focus-groups discussion was held to gather additional reasons as to why control-group students didn't participate in the team work. After the running of the presentations, observation was used to identify the remaining contingent factors which couldn't be observe during interview, focus-group discussion and on questionnaires. Each of these 27 students was received questionnaires to assess their unnecessary reasons why they couldn't participate in teamwork and to assess their beliefs about the perceived significance of their group work participation.

3.6. Methods of Data Analysis

To asses' students' perception in teamwork, this study uses both quantitative and qualitative approaches because both numerical and non-numerical data were collected during the study. Number of students exist and participate in teamwork, number of days for discussing and number of groups per section were analyzed using quantitatively. Perception and interests of students towards teamwork also analyzed through qualitative analyzed method. The data that collected from primary and secondary sources was analyzed through descriptive statistical tools and descriptive narrations to analyze the data that gathered through questionnaires and observations.

3.7. Action Plan

The action research aimed to improve student engagement in the teamwork model among fourth-year Physics students at WKU. To achieve this, an intervention plan was designed and implemented. Awareness sessions for both students and instructors emphasized the value of active peer learning and encouraged a supportive, collaborative learning culture. Students were motivated to ask and answer questions without fear of being incorrect, fostering confidence and critical thinking. Mentors received continuous guidance, and instructors were encouraged to engage actively in peer learning sessions. Monitoring and evaluation mechanisms were put in place to assess and adjust the intervention as needed.

3.8. Implementation of Action Plan

The intervention was implemented in phases throughout the semester. The initial phase included orientation sessions and demonstrations of the teamwork participation model. Instructors acted as facilitators, guiding students while allowing them to lead discussions and problem-solving tasks. Weekly teamwork sessions were scheduled, with designated group leaders responsible for facilitating discussions and tracking group progress. Digital platforms such as messaging apps and online forums were integrated to extend collaboration beyond classroom sessions. Mid-semester feedback from both students and instructors informed necessary adjustments to improve the process.

3.9. Evaluation

The intervention's effectiveness was evaluated using both quantitative and qualitative tools. Metrics such as participation rates, attendance records, and improvements in academic performance were analyzed. Surveys and focus group discussions captured student perspectives, while instructor observations offered additional insights into the implementation. The overall impact was assessed by comparing student engagement and academic outcomes before and after the intervention. Based on the findings, recommendations were developed to enhance and sustain the teamwork participation model for future cohorts.

4. Analysis, Interpretation and Discussion

4.1. Background of the Respondents

The total number of fourth-year Physics students in 2017 E.C was 27. Table 1 shows the frequency and percentage of male and female respondents.

Table 1. *Sex ratio of the respondents of second-year Physics students (2017 E.C).*

No.	Sex	Frequency	Percentage
1	Male	18	66.67%
2	Female	9	33.33%
3	Total	27	100%

Out of the 27 students, 18 (66.67%) were male and 9 (33.33%) were female, indicating a male-dominated sample. Understanding the sex composition is important for contextualizing potential gender-related differences in teamwork participation.

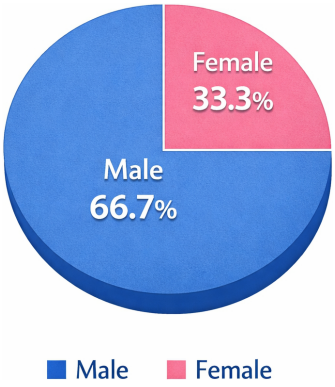


Figure 1. *Gender distribution of students.*

4.2. Findings Before Intervention

4.3. Reasons for Non-Participation in Teamwork

Table 2 summarizes student responses to a Likert-scale questionnaire assessing reasons for non-participation in teamwork. Responses ranged from 1 (Strongly Disagree) to 5 (Strongly Agree).

Table 2. *Assessing the reasons why students do not participate in teamwork (Before Intervention).*

Reason	1	2	3	4	5
I feel motivated to participate in group work	7 (26%)	11 (41%)	4 (15%)	2 (7%)	3 (11%)
I understand the purpose and importance of teamwork	2 (7%)	12 (45%)	7 (26%)	2 (7%)	4 (15%)
I feel confident expressing my ideas in group discussions	1 (4%)	4 (15%)	6 (22%)	6 (22%)	10 (37%)
All team members usually contribute equally	13 (48%)	6 (22%)	2 (7%)	5 (19%)	1 (4%)
I have received training or guidance on how to work effectively in teams	1 (4%)	14 (52%)	3 (11%)	6 (22%)	3 (11%)

Table 2 presents the students' perceptions of various factors influencing their participation in teamwork. The responses are categorized on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), highlighting key trends and potential barriers.

A notable observation is that a significant portion of students do not feel motivated to participate in teamwork (67%). Similarly, 56% disagreed or strongly disagreed that they have received adequate training or guidance on how to work effectively in teams (Item 5), suggesting a lack of institutional support as a common issue.

When asked whether instructors actively monitor and support teamwork (Item 9), 70% strongly disagreed/disagreed. This indicates a perceived absence of instructor involvement, which may discourage active participation and accountability among team members. Furthermore, a similar pattern is seen regarding appreciation of student participation (Item 12), where again 70% strongly disagreed/disagreed, suggesting that recognition and encouragement are lacking in group settings.

On the other hand, students showed relatively more agreement with statements indicating challenges within team dynamics. For instance, 70% strongly agreed/agreed that not all team members contribute equally (Item 4), and 19% agreed or strongly agreed that they struggle with expressing ideas (Item 3), reflecting interpersonal and confidence-related barriers.

Environmental factors also emerged as concerns: a combined 59% agreed or strongly agreed that difficulty finding time (Item 7) and resource constraints (Item 10) affect collaboration. Language or cultural differences (Item 8) were also a moderately significant factor, with 59% either agreeing or strongly agreeing.

Interestingly, negative past experiences in team work (Item 11) also showed little rates of agreement (23%), which might indicate that previous frustrations or failures may shape reluctance to engage in future teamwork.

Lastly, most students disagreed /strongly disagreed (52%) with the idea that they understand the importance of teamwork (Item 2), indicating a need to better communicate the educational value of collaboration.

In summary the data clearly point to multiple interconnected barriers to effective teamwork among students. These include lack of motivation, limited instructor engagement, inadequate training and unequal contributions within groups. Addressing these issues through structured guidance, monitoring, and recognition mechanisms, along with logistical and resource support, could significantly enhance student participation in teamwork activities.

4.4. Knowledge on Benefits of Teamwork

Table 3 presents students' perception of the benefits of teamwork.

Table 3. Students' knowledge on benefits of participation in teamwork.

Benefit	Always	Sometimes	Never
Adds interest to the student	11 (41%)	14 (52%)	2 (7%)
Engages students in learning activities	10 (37%)	17 (63%)	0 (0%)
Team members can openly discuss their own ideas	18 (67%)	9 (33%)	0 (0%)
Helps students develop speaking skills	17 (63%)	9 (33%)	1 (4%)
Promotes preparation on previous assignments	12 (45%)	15 (55%)	0 (0%)

According to the above Table 2, students admitted that participation in teamwork is very crucial for their academic wellbeing even for their future career.

Majority of respondents (67%) reported that team members can always openly discuss their own ideas, and 63% acknowledged that teamwork consistently helps them develop important speaking skills. These findings align with previous research emphasizing collaborative learning as a medium for enhancing communication competence and building confidence in verbal expression (Johnson & Johnson, 2009).

Over half of the respondents (52%) stated that teamwork always facilitates the sharing of views, ideas, and beliefs about the content under discussion. Moreover, 41% reported that teamwork provides consistent opportunities to practice using the language specific to the discipline. These responses suggest that teamwork fosters meaningful academic dialogue, supporting students' conceptual understanding and disciplinary literacy (Slavin, 1996). 45% of the participants agreed that teamwork always provides useful feedback, and an equal percentage believed it contributes to classroom control. This may reflect students' appreciation for peer-driven reflection and the structured nature of group activities, which can enhance classroom organization and self-regulation (Gillies, 2003).

100% of respondents agreed (either "always" or "sometimes") that teamwork promotes preparation on previous assignments, suggesting its role in motivating students to engage with learning tasks in advance. This preparation likely contributes to improved academic performance and collaborative success.

Despite these positive perceptions, the data highlight a significant concern regarding equitable participation. Only 19% of respondents felt that no individual, group, or gender dominates team activities, while 33% believed that such dominance is never absent. This imbalance may hinder effective collaboration and reduce the benefits of teamwork for marginalized or less assertive members. It underscores the need for instructors to implement inclusive group work strategies, such as rotating roles and structured interaction protocols (Oakley et al., 2004).

Furthermore, some benefits were perceived as inconsistent. For example, although 37% stated that teamwork always engages students in learning activities, a larger proportion (63%) felt this only occurs sometimes. This variation could reflect differences in how group activities are facilitated, the nature of tasks, or interpersonal dynamics within teams.

In summary, the study reveals that students largely acknowledge the value of teamwork in enhancing learning experiences, particularly in communication, feedback, and preparation. However, ensuring equitable and consistent participation remains a challenge. Future efforts should focus on designing inclusive and well-structured collaborative tasks that maximize the pedagogical potential of teamwork.

Open-Ended Questions (Interview with students)

1. What motivates or encourages you to participate in teamwork activities?

Few of the 27 respondents expressed that they are motivated to participate in teamwork activities because they enjoy exchanging ideas, learning from others, and achieving shared goals. They feel that working in a group helps improve communication, builds mutual understanding, and strengthens problem-solving skills. Many students emphasized that teamwork creates a supportive environment where everyone can contribute their strengths and feel included.

Additionally, several students mentioned that group activities help them build confidence, develop leadership abilities, and manage their time more effectively. They also appreciate the opportunity to develop friendships, reduce stress by sharing responsibilities, and gain experience that will be useful in future academic or professional settings. Overall, students see teamwork as both enjoyable and beneficial for personal and academic

growth.

2. What are the biggest challenges you face when working in a team?

When asked about the biggest challenges faced while working in a team, most of the respondent mentioned:

1) Unequal participation - Many students felt that some team members did not contribute fairly to the work.
2) Scheduling conflicts - Finding a common time to meet was difficult due to differing schedules.
3) Communication issues - Misunderstandings and lack of effective communication affected teamwork.
4) Unclear roles - Ambiguity in task assignments led to confusion and inefficiency.
5) Different commitment levels - Variations in motivation and effort among members created imbalance.

These challenges indicate the importance of setting clear expectations, effective communication, and equal involvement for successful teamwork.

4.5. Identified Challenges and Proposed Solutions

Table 4 summarizes the main challenges and their corresponding solutions.

Table 4. Identified challenges in teamwork and proposed solutions.

Challenge	Proposed Solution
Lack of motivation	Awareness creation through training on the value of teamwork
Unequal participation	Structured group work with role rotation and monitoring
Lack of teamwork training	Provide worksheets and peer-guided exercises
Time management issues	Allocate longer discussion periods and schedule weekly sessions
Cultural and language barriers	Encourage inclusive communication and group discussion
Limited instructor monitoring	Mentors actively observe and guide group work
Inadequate resources	Ensure access to labs, internet, and course materials
Poor communication skills	Practice discussion and presentation exercises in groups

Addressing motivation, structure, and guidance were prioritized. Solutions focused on increasing both institutional support and student accountability.

4.6. Action Plan

An action plan was developed to implement solutions, assigning responsibility to researchers, instructors, and the department head (Table 5).

The structured action plan ensured targeted interventions were implemented with clear responsibilities and timelines, enabling measurable improvement in participation.

Table 5. Action plan for improving teamwork participation.

Finding	Action	Implementation	Date
Lack of awareness	Conduct training and provide guidance	Researchers deliver sessions with department support	10/08/2017 E.C
Lack of confidence	Encourage participation through questions	Open-ended discussion led by researchers	13/08/2017 E.C
Weak mentoring	Mentor awareness and guidance	Researchers discuss performance with mentors	14/08/2017 E.C
Lack of worksheet	Provide worksheets for discussion	Prepare and distribute worksheets weekly	17/08/2017 E.C
Shortage of time	Extend discussion periods	Adjust schedule with department approval	19/08/2017 E.C
Absence of teacher	Ensure teacher presence	Encourage teacher participation	23/08/2017 E.C

4.7. Implementation of Interventions

In this section, we discussed about how to come across the problems of teamwork which hindered the participation of fourth-year Physics students on team-based activities. After the problem was identified the next step in the research is to come up with the elucidations of those problems. As a solutions for hindering factors of teamwork the following proposals are important to see.

4.7.1. Creating Awareness for Students

Based on our data lack of awareness as the challenge of the fourth year biotechnology students of this year (2017 E.C) not to participate in team-based activities. We advise the advantage of teamwork such as improving academic performance, develop social interaction, increase student retention, enhance student satisfaction with their learning experience and promote students' self-esteem to all students for two weeks. We also give short time training for each group student's to use group strategies to facilitate successful peer learning like cooperating and crossover group.

This strategies are creates the atmosphere for students to increase their academic achievement as they learn social skills, such as resolving disputes on their own, helping newcomers feel welcome, taking turns, listening to others, contributing ideas, explaining oneself clearly and encouraging others. We give this training increased the students awareness about peer learning.

4.7.2. Improving Students Confidence

Some of the fourth year Physics department students have shied and stress this student's problem to give chance to take social and academical issue with friends and group members. We tried to develop social interaction discuss in the class and share with idea. Always only leaders participated on discussions but it is wrong methods so each group members are actively participate. After discussion each group members have present in five minutes. We asked a question for presenter and they have tried to answer the question. We advise read different books and providing positive feedback and encourage the students.

4.7.3. Initiating Mentor/Teachres to Facilitate on Students Teamwork

To overcome the problem of mentor of students, the researchers were discussed with the mentor of students and the following issues.

1. Giving awareness for the mentor of students. We are not saying that mentor of the fourth year Physics department students of 2017 E.C have no knowledge of how to implement or apply students network into action. Rather than taking students attendance no more work was done but there were some problems of mentor such as selecting students who were not fluently participating or not, knowing the titles which the students were selected to discuss on, looking after those groups who were actively discussing, playing or talking out of their titles, dominated by one individual or those who listen silently without any participation because of either language barrier, fear, lack of confidence or not.

2. As we have tried to apply and collected information from different mentors of students of 2017 E.C year, the effectiveness of group network depends upon group management of both teacher and students. That means if our management of students is right, the students will thrive in the class; and they may even love it but if the students get the presentation and discussion on teamwork as wrong, the classroom can become a place of stress, infecting both the teacher and students.

4.7.4. Preparing Work Sheet

Preparing work sheet was one of the strategies which are intended to increase the participation of students in teamwork. We have prepared or inform teachers to prepare work sheet which enable students to read, discuss and share ideas on discussing questions. Around eight worksheets were given for each group of 27 students in the fourth year Physics department students weakly for one-month networking time and encourage each members of the group to come up with plenty of ideas on the given worksheet before discussion day, that also make them clear to share their ideas. The selected subject for worksheet was based on student's preference and the next proximate exam course. Students were initiated and eager to participate actively if the work sheet is prepared by considering the coming exam day and/or subject. Through this method, we have observed that, students' participation was coming with increasingly from day to day as we observe the number of their existence, as well the motivation of participants also maximized; they discussed warmly without wasting time by talk unnecessary issues.

4.7.5. Allocate Appropriate Time

We know that the time duration for student's network was 1:30hr once per a weak and this was not appropriate and enough to discuss the courses or topics those learned in the class within a weak. Beyond this, students also raised that the allotted time for team-based activities was the main challenge to cover all necessary team-based activities of a weak within one hour and half minute. By considering this time constraints, we have discussed with Physics department head and mentors to extend the time of discussion from 2:00 pm up to 4:30 pm and encourage

students to cover what they need to discuss in team.

4.8. Evaluation of Intervention

After we tried to instruct them about the importance of teamwork, some students were responded by actively participating in student team-based activities which is the entire time takes place on Friday afternoon and coming on student's team-based activities on time. After we have implement the solution listed above, the number of students participated and attend peer networking become maximized, their interest also increases due to they discussed actively and motivated. As listed below, the overall change of student's participation in networking is changing dramatically.

Post-intervention results (Table 6) show improved student participation and motivation.

Table 6. Reasons for non-participation in teamwork (After Intervention).

Reason	1	2	3	4	5
I feel motivated to participate in group work	3 (11%)	2 (7%)	4 (15%)	11 (41%)	7 (26%)
I understand the purpose and importance of teamwork	2 (7%)	2 (7%)	4 (15%)	12 (45%)	7 (26%)
I feel confident expressing my ideas in group discussions	1 (4%)	4 (15%)	6 (22%)	6 (22%)	10 (37%)
All team members usually contribute equally	1 (4%)	5 (19%)	2 (7%)	6 (22%)	13 (48%)

As we see from Table 6, almost all students (67%) are interested to actively participate in team-based activities and about 71 % of the respondents believe that team working is significantly important not only for team leader but also for all member of the team.

The data reveals that most students feel motivated and understand the importance of teamwork, with the majority agreeing or strongly agreeing to these statements. Students also report feeling confident in expressing ideas and believe that team members generally contribute equally. Additionally, significant number of students feel that instructors actively support or monitor teamwork, dominant group members, and past negative experiences and a lack of peer appreciation were also noted as minor issues affecting participation. However, a few number indicated they have not received adequate training on effective teamwork. Concerns were raised about scheduling difficulties, and language or cultural barriers.

Post-intervention, student motivation, confidence, and equal contribution improved significantly. This confirms that structured guidance, training, and active instructor involvement are effective strategies for enhancing teamwork participation.

5. Conclusion and Recommendations

5.1. Conclusion

The research highlights that the participation of fourth-year Physics students at Wolkite University in teamwork was significantly hindered by motivational, interpersonal, and institutional challenges. Key issues identified included lack of clarity on the purpose of teamwork, unequal task sharing, limited support from instructors and scheduling difficulties. However, targeted interventions such as teamwork training, instructor monitoring, and accountability frameworks proved effective in enhancing student engagement and collaboration. The results underscore the importance of institutional support, active facilitation by educators, and structured team dynamics in improving teamwork outcomes.

5.2. Recommendations

Based on the findings, it is recommended that teamwork skills be integrated into the curriculum through structured activities and training sessions. Instructors should actively monitor group work, provide guidance, and implement peer evaluation to ensure equal participation. The university should also address resource limitations, promote inclusive communication, and recognize student contributions to enhance motivation and engagement in teamwork.

Abbreviations

HDP	Higher Diploma Program
WKU	Wolkite University
CERS	Central Ethiopia Regional State
PhD	Doctor of Philosophy
E.C	Ethiopian Calander

Author Contributions

Asmamaw Tesega: Conceptualization, Formal Analysis, Investigation, Methodology, Project administration, Resources, Software, Visualization, Writing – original draft, Supervision, Validation, Writing – review & editing

Conflicts of Interest

The author declares no conflicts of interest.

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