Secondary school teachers' management and assessment strategies of free-riders in group work: implication for engaging the disengaged

Abate Demissie Gedamu a,*, Getu Lemma Shewangezaw b

a Department of English Language and Literature, Arba Minch University, Ethiopia
b Department of Geography and Environmental Studies, Arba Minch University, Ethiopia

ARTICLE INFO

Keywords:
Assessment
Management
Free-riders
Challenges
Group work
Engagement in learning

ABSTRACT

This study aimed to explore teachers' management and assessment strategies of free-riders, and the challenges they faced in the process at selected secondary schools in Ethiopia. To address these objectives, a concurrent mixed-methods design was adopted. 146 teachers were selected for the questionnaire survey while four teachers were selected for follow-up interviews. To decide teachers' management and assessment levels of free-riders, a one-sample t-test was used at ($\alpha = 0.05$) while the qualitative data were described based on their themes. The results showed teachers infrequently used some assessment strategies even if they offered the same marks for an unequal contribution. As well, teachers attempted to apply various management strategies although they fall short of sharing the tasks with individual members. Also, workload, class size, lack of sufficient skills, and failure to report free riders were some of the challenges teachers faced in the management and assessment of free riders.

1. Introduction

Cooperative learning (CL) is a valuable pedagogical practice through which students work together in small groups collaboratively. It is a student-centered pedagogy in which learners work in small groups to maximize their learning (Johnson and Johnson, 1999). In small groups, students collaborate, communicate, explain their understanding, exchange ideas, solve problems, and help each other to achieve shared goals (Davies, 2009; Gillies, 2014). Moreover, CL enhances the academic achievements of students and improves better communication, higher self-esteem, problem-solving skills, and social and conflict resolution skills (Cheong, 2010; Balache and Brody, 2017). On top of this, it provides learners with an encouraging, comfortable, and helpful learning environment that motivates them for learning (Gupta, 2004).

Group work promotes deep, active, and cooperative learning (Ruial and Bastiaans, 2003; Daviees, 2009). Besides, it builds transferable skills for learners such as leadership, management, communication skills, and mutual engagement (Devine, 2002). As well, group work provides students with a simulated real-world workplace environment that enhances students to gain teamwork experience, leadership, communication, and group skills (Aggarwal & O’Brien, 2008; Hall and Buzwell, 2012; Hansen, 2006). Therefore, group work prepares students for real-world tasks required of them.

Despite the importance of cooperative group work in education, there are several challenges and problems which make it dysfunctional. Among them, are cultural limitations (Sharan, 2010), failure to implement principles of cooperative learning (Koutselini, 2009), and the assessment of group work (Ross and Rolheiser, 2003; Gillies and Boyle, 2010; Le et al., 2018), and poor management and the assessment of free riders (Giraud and Enders, 2000; Gedamu and Shewangezaw, 2020a) were some for the optimal function of cooperative group work. Amid these, however, the management and the assessment of free riders are less studied though it is a potential problem (Giraud and Enders, 2000) that adversely affects education quality.

Gedamu and Shewangezaw (2020b) studied secondary school teachers’ and students’ perspectives on cooperative group work...
assessment challenges in Ethiopia. The results from both questionnaires and interviews identified free riding as a top challenge for the optimal function of the CL group. The results from FGD revealed that most group members tended to leave the bulk of group work to group leaders. As a result of this unfair workload, group leaders and brilliant students began to reduce the quality of their contributions. Therefore, the lack of proper management of non-contributing members to student group work has become a prevailing problem.

Literature suggested appropriate assessment of group work reduces or eliminates the effect of free-riding behavior of students. Studies showed that peer assessment of individual contribution to group work improved student engagement (Johns-Boast, 2010), and reduced free-riding by rewarding students who did their tasks while penalizing free-riders (Davies, 2009; Hall and Buzwell, 2012). Similarly, proper management of group work reduces or eliminates free-riding. The management of free-riding individuals is a strategy that ensures and enhances fairness by involving students who do not contribute sufficiently (Roberts and Mclnnerney, 2007; Davies, 2009; Maiden and Perry, 2011). Gedamu and Shewangezaw (2020b) found that free-riders constituted a chief problem in group work in selected secondary schools in Ethiopia. The results from both questionnaires and interviews identified both components of the tool are content valid. Besides, the reliability which implied the instrument has acceptable face validity. Concerning content validity of items of the tools, Item Content Validity Index (I-CVIs) for clarity, relevance, and appropriateness were found 0.92 and 0.96 for the management of free-riders, and 0.92 and 0.94 for the assessment of free-riders respectively. This disclosed both components of the tool are content valid. Besides, the construct validity of the tool was also rated in light of the theoretical framework of the management and assessment of free-riders in group work and was found that the tool retained the underlying concepts that have to be covered.

The tool was also piloted for its internal consistency reliability on secondary school teachers who were not participants of the study before using the tool for actual data collection. The internal consistency reliability tests were computed for the management and assessment of free-riders in group work subscales with Cronbach’s alpha with the value of ≥ .70 cut off. The internal consistency reliability values were found to be (α = .96) for the management of free-riders, and (α = .92) for the assessment of free-riders in the group work subscale. This implies that the tool is internally consistent to measure the management and the assessment of free-riders in group work.

The purpose of the interview was to probe in-depth data from selected teachers on their management and assessment practices of free-riders and the challenges they faced in the management and assessment of free-riders in group work. Therefore, semi-structured questions were

### 2. Research methodology

This section describes the research design, sample and sampling procedures, data collection tools, and methods of data analysis.

#### 2.1. Research design

This study explores teachers’ management and assessment of free-riders in group work, and the challenges they faced in the processes at selected secondary schools in SNNPRS, Ethiopia. To address these objectives, a concurrent mixed-methods design, which employs qualitative and quantitative data collection at the same time, was used. The qualitative and quantitative data jointly are thought to improve the validity and credibility of the results of the study. Therefore, questionnaires and interviews with teachers were employed to explore the issues.

#### 2.2. Participants of the study

Secondary school teachers in five public schools were the population of this study. Among the secondary schools in SNNPRS, Arba Minch, Lemat, Chamo, Lantea, and Konso Secondary Schools were considered for this study. The total population in the schools was 655 teachers in the 2020/21 academic year. The teachers were selected for the study regardless of the subjects they teach. To estimate the sample size from the total population of 655, sample size determination formula, \( n = z^2 \frac{pqN}{c^2 (N-1)} + z^2 \frac{pq}{N-1} \) was applied (Kothari, 2004). Therefore, the sample size makes up a total of 154 teachers for the questionnaire survey.

After deciding the sample size, sample teachers were selected from the population (sample frame). Since dividing the population (655) by a sample size of (154) provided the nh value of 4, every 4th teacher in the list was included in the sample. Therefore, it is plausible to claim that a systematic random sampling technique was applied to select the samples. Nonetheless, only 146 participants, which constituted 94.8%, returned the questionnaire dispatched for the study.

The participant teachers for the questionnaire survey were drawn from all 14 disciplines taught at secondary school. The number of the participants as per their subjects they teach were from English language (n = 15), physical health education (n = 5), Amharic and other local languages (n = 16), Mathematics (n = 17), Physics (n = 12), Chemistry (n = 12), Biology (n = 12), Geography (n = 12), History (n = 10), Civic & Ethical education (n = 11), ICT (n = 8), Technical Drawing (n = 5), General Business (n = 5), and Economics (n = 6). Concerning their gender, 45 are males while the females are 101. As to educational levels, 45 had first degrees while the rest 95 had masters’ degrees. Regarding teaching experiences, 8 of them had 1–2 years of experience while 11 teachers taught for 3–5 years, 25 of them had 6–10 years of service while the rest 102 had teaching experience for more than 11 years. However, four teachers were selected for interviews based on individual willingness for a face-to-face interview.

#### 2.3. Data collection tools

To measure the management and assessment of free-riders in group work, a questionnaire and interviews with teachers were used. The purpose of the questionnaire was to measure teachers’ management and assessment of free-riders in group work. Besides, it was used to examine the challenges teachers faced in the management and assessment of free-riders in group work. The questionnaire was prepared from the related literature (Levin, 2003; McArdle et al., 2005; Swaray, 2012; D’Arcy et al., 2016; Chiriac and Frykedał, 2019) on a 5-point Likert scale ranging from strongly agree (5) to strongly disagree (1). The management of the free-riders component had 15 items while the assessment of free-riders subsection had 11 items on a 5-point Likert scale. As well, the questionnaire had one open-ended item for each of the management and assessment of free-riders components. The purpose of the open-ended items was to draw teachers’ management and assessment attempts of free-riders. There was also one open-ended item on the challenges teachers faced in the management and assessment of free-riders as well. Its purpose was to let teachers articulate their management and assessment attempts of free-riders without limiting them, unlike the closed-ended items.

The questionnaire was validated for its face validity, content validity, and construct validity by three Education experts in psychometrics at the College of Pedagogy. The result showed an index of ≥0.82 for face validity which implied the instrument has acceptable face validity. Concerning content validity of items of the tools, Item Content Validity Index (I-CVIs) for clarity, relevance, and appropriateness were found 0.92 and 0.94 for the management and assessment of free-riders respectively. This disclosed both components of the tool are content valid. Besides, the construct validity of the tool was also rated in light of the theoretical framework of the management and assessment of free-riders in group work and was found that the tool retained the underlying concepts that have to be covered.

The tool was also piloted for its internal consistency reliability on secondary school teachers who were not participants of the study before using the tool for actual data collection. The internal consistency reliability tests were computed for the management and assessment of free-riders in group work subscales with Cronbach’s alpha with the value of ≥ .70 cut off. The internal consistency reliability values were found to be (α = .96) for the management of free-riders, and (α = .92) for the assessment of free-riders in the group work subscale. This implies that the tool is internally consistent to measure the management and the assessment of free-riders in group work.

The purpose of the interview was to probe in-depth data from selected teachers on their management and assessment practices of free-riders and the challenges they faced in the management and assessment of free-riders in group work. Therefore, semi-structured questions were
prepared to guide the interviews. The interviews were conducted in the Amharic language (the official language) to let the teachers explain their ideas without language limitations.

2.4. Methods of data analysis

The quantitative data collected through the questionnaire were encoded into SPSS version 21 for analysis. Items mean were used as a unit of analysis. To examine teachers’ management and assessment levels of free-riders in group work, a one-sample t-test was used. More clearly, a one-sample t-test was employed to determine whether the mean (observed mean) value for teachers’ management and assessment of free-riders was significantly above or below the expected mean (3.00). The data were checked for the assumptions of the one-sample t-test to protect against errors that may arise from infringement of the presuppositions of the one-sample t-test. On top of this, a five percent (α = 0.05) level of significance was applied all through the analysis.

The data collected through interviews were coded, categorized, and analyzed qualitatively through verbal descriptions. Besides, the data obtained from the open-ended questionnaire item was summarized and described based on its theme. Then, the results obtained through quantitative and qualitative methods were interwoven in the discussion section to understand and acquire better insight into the problem under the study.

2.5. Ethical considerations

Ethical considerations in conducting research helps to be accountable and avoid misconduct and conflict of interest. Accordingly, Arba Minch University, College of Social Sciences and Humanities, research ethics approving committee approved the conduct of this study. Besides, all the participants of this study were asked for their consent to take part in the study. They agreed and volunteered to participate in the study, fill out the questionnaire, and gave interviews.

3. Results of the study

This study aimed to explore teachers’ management and assessment of free-riders in group work. Besides, it examined the challenges teachers faced in the management and assessment of free-riders in group work in selected secondary schools in SNNPRS, Ethiopia. The data analysis for each objective has been presented in the subsections below.

3.1. The management of free-riders in group work

As shown in Table 1, a one-sample t-test was performed to find out whether the observed means of the management of free-riders in group work were significantly different from the expected mean (3.0). The results showed that statistically, significantly higher observed mean values than the expected mean of 3.00 (at p < .002) for most of the items. To this effect, teachers used to ‘make students know they are jointly responsible for the entire work’, ‘make students warn free riders to contribute their share’, ‘ask students report group members who fail to contribute their share’, ‘make sure equitable and fair distribution of tasks and individual’, ‘form small heterogeneous group most of the time’, ‘make the group to assign group leader and secretary’, ‘go round and monitor group work’, ‘assist and encourage students while working the group work’, ‘orient each group to have unity and team spirit’, ‘specify the contribution required of each individual’, ‘encourage students not to ‘ignore their colleagues’ carelessness’, and marginally for ‘specify the contribution required of each individual, in the management of free-riders in group work.

However, a significant but negative mean difference from the expected mean (at p < .001) was found for ‘make a sure division of labor (roles) upon tasks for each group member.’ In contrast, statistically, a non-significant mean difference from the expected mean (at p > 0.05) was found for ‘make an individual share of tasks of the group work clear’, ‘make each student responsible for a certain section of the group work’, and ‘support and make a follow-up of the group to reduce free riding’. Furthermore, the result showed a statistically significant mean difference (at p < .001) between the expected mean (3.0) and the overall observed mean of the scale implying that teachers used to manage free-riders to the optimum.

Though the mean values for many items of the questionnaire were found statistically significant above or below the expected mean, the magnitude of the differences (the effect sizes) of the items varied indicating they differ in their strengths. Accordingly, items number 4, 9–12 had large effect sizes (η²) that ranged from .27 to .50 while items number 5, 6, 8 & 14 had medium effect sizes ranging from .18 to .23. Similarly, items number 3, 7 & 13 had small effect sizes which ranged from .03 to .07. More importantly, the management of the free-riders scale was found to have a medium effect size (η² = .17). Therefore, it seems the strategies with which teachers manage free-riders in group work vary in their levels of potency based on the situations although they applied moderate management strategies as a whole.

3.2. The assessment of free-riders in group work

As shown in Table 2, a one-sample t-test was performed to find out whether the observed means of the assessment of free-riders in group work were significantly different from the expected mean (3.0). Accordingly, statistically significant higher observed mean values from the expected mean of 3.00 (at p < .006) for ‘communication of group work assessment rubrics to students’, ‘use of multiple forms of assessment to reduce free riders in group work’, ‘assessment of individual contribution through oral questioning’, ‘timely formative feedback on group work’, and ‘use of peer assessment to assess an individual contribution to the group work’ items. Conversely, a significant but negative mean

Table 1. One-sample t-test results on the management of free-riders.

| Items | X | t   | p   | η²  |
|-------|---|-----|-----|-----|
| 1 I make an individual share of tasks of the group work clear | 2.90 | -0.88 | .38 | – |
| 2 I make each student responsible for a certain section of the group work | 3.25 | 1.94 | .054 | – |
| 3 I make sure division of labor (roles) upon tasks for each group member | 2.67 | -3.2 | .002 | .07 |
| 4 I make students know they are jointly responsible for the entire work | 3.76 | 7.34 | .000 | .27 |
| 5 I make students warn free riders to contribute their share | 3.58 | 6.25 | .000 | .21 |
| 6 I ask students to report group members who fail to contribute their share | 3.60 | 5.58 | .000 | .18 |
| 7 I make sure equitable and fair distribution of tasks and individual | 3.23 | 2.64 | .009 | .05 |
| 8 I form small heterogeneous groups most of the time | 3.69 | 6.67 | .000 | .23 |
| 9 I make the group to assign group leader and secretary | 3.92 | 9.50 | .000 | .38 |
| 10 I go round and monitor group work | 3.72 | 7.56 | .000 | .28 |
| 11 I assist and encourage students while working the group work | 4.03 | 11.9 | .000 | .50 |
| 12 I orient each group to have unity and team spirit | 3.82 | 10.2 | .000 | .42 |
| 13 I specify the contribution required of each individual | 3.26 | 2.01 | .046 | .03 |
| 14 I encourage students not to ‘ignore their colleagues’ carelessness | 3.56 | 6.27 | .000 | .21 |
| 15 I support and make a follow-up of the group to reduce free-riding | 2.90 | -0.84 | .403 | – |

Sub-scale 3.46 5.49 .000 .17
difference from the expected mean (at p < .013) was found for ‘assessment of individual contribution to the group work’, ‘assessment of group work process’, ‘use of self-assessment to assess an individual contribution to the group work’, ‘assessment of individual contribution through individual written report’, ‘assessment of individual contribution through individual presentations’, and ‘assessment of individual contribution through portfolios assessments.’ Besides, the result verified statistically non-significant mean differences (at p > 0.05) between the expected mean (3.0) and the overall observed mean of the scale.

From the above presentation, it can be concluded that teachers used to ‘communicate group work assessment rubrics to students’, ‘use multiple forms of assessment to reduce free riders in group work’, ‘assess individual contribution through oral questioning’, and ‘use peer assessment to assess an individual contribution to the group work’ to reduce free riders in group work. The effect sizes ($\eta^2$) for these items ranged from .05 to .19 (small to medium). Nevertheless, the questionnaire data showed teachers used to ‘assess the individual contribution to the group work’, ‘group work process’, ‘use self-assessment to assess an individual contribution to the group work’, ‘assess individual contribution through individual written report’, ‘assess individual contribution through individual presentations’, and ‘assess individual contribution through portfolios assessments’ below the expected average required of them to reduce free-riders in group work. The effect sizes ($\eta^2$) for these items were found to range from .04 to .22 (small to medium). Yet, the overall mean difference revealed that teachers remained ambivalent about the assessment of free-riders in group work.

### 3.3. Challenges teachers faced in the management and assessment of free-riders

Table 3 shows the summarized themes of the study participants to the open-ended questions on the challenges they faced in the management and assessment of free-riders in group work.

It is difficult to separate the challenges teachers faced in the management and assessment free-riders into either assessment challenges or management challenges. This is because assessment and management challenges are highly interrelated and mutually influence each other. This is to mean that failure to manage free-riders influences the assessment and weakness in the assessment impact the management endeavor of the free-riders in group work directly or indirectly. Accordingly, the teachers enumerated several challenges they faced in the management and assessment endeavor of free-riders in group work in two categories-students related and others. The majority of the challenges are related to the students while a few of them like class size, workload, and lack of measure on discipline issues are externalized and related to school administration. Therefore, it seems apparent to conclude that the secondary school teachers in the selected schools externalized the challenges they faced to students, and could not see inward themselves.

### 3.4. Teachers’ interview data analysis

#### 3.4.1. The assessment of free riders in group work

Interviews were conducted with selected teachers on the assessment of free riders in group work. One of the assessment methods that harbor free-riders is the assessment of group products at the expense of the assessment of the group process. Concerning this situation, the interviewed teachers reported that they often assess group products with less concern for the assessment of the group process. Nevertheless, they have not denied the assessment of the group process. One of the interviewees stated the issue as:

*I think both the group product and the process should be assessed depending on the goal of the task. But, practically I rarely and insufficiently assess the group process. Therefore, I can say I assess group products most of the time (Teacher 1).*

As to the assessment of the group process to ensure accountability in group work, the interviewees reported few of their attempts. To begin with, one of the teachers (T1) mentioned he used to ask a member of the group to report his individual contribution to the group work. The interviewee stated the following to mention:

*I sometimes assess the contribution of each member of the group through oral questions. I capture the free-riders this way. Nevertheless, I give the same marks (equal marks) to all members of the group since I feel a one-time oral questioning may not be sufficient to judge them.*

Similarly, the second interviewee (T2) claimed he uses tests/quizzes prepared from the contents of group work to reinforce the group work. Specifically, he stated his assessment attempts as follows:

*Group work is an acceptable pedagogy that fosters the life skills of learners to work together. When it comes to fairness and equitability of assessment and marks to reduce free-riding, its practicality is daunting. I just have an attempt to reduce free-riding problems through teacher-made tests/quizzes. I prepare tests/quizzes out of the contents of the group work. I feel this is a small portion of reducing free-riding as they cannot work on tests/quizzes unless they work on the group work. This method either penalizes the free-riders to some extent or enforces them to work on the group task.*

| Items X t P $\eta^2$ |
|----------------------|
| 16 I assess individual contribution to the group work 2.73 -2.5 .013 .04 |
| 17 I communicate group work assessment rubrics to students 3.55 5.3 .000 .16 |
| 18 I apply multiple forms of assessment to reduce free riders in group work 3.30 3.1 .002 .06 |
| 19 I assess individual contribution through oral questioning 3.29 2.8 .006 .05 |
| 20 I assess group work process 2.46 -5.6 .000 .18 |
| 21 I offer timely formative feedback on group work 3.57 5.9 .000 .19 |
| 22 I use peer assessment to assess an individual contribution to the group work 3.32 3.9 .000 .10 |
| 23 I use self-assessment to assess an individual contribution to the group work 2.50 -6.5 .000 .22 |
| 24 I assess individual contribution through written report 2.67 -2.9 .005 .05 |
| 25 I assess individual contribution through individual presentations 2.50 -4.9 .000 .14 |
| 26 I assess individual contribution through portfolio assessments 2.63 -4.2 .000 .11 |
| **Sub-scale** 2.95 -.57 .57 |

Table 2. One-sample t-test results on the assessment of free-riders.

| Challenges Respondents comments |
|----------------------------------|
| Student Related |
| The students had beliefs that group work waste their study time |
| The influence of clever students on the group members |
| Lack of interest to do the tasks assigned |
| Working for marks instead of knowledge/skills |
| Misunderstanding of the value of group work |
| The loss of the goal of education (students) |
| High dependency on clever students for group work |
| Failure to expose the non-contributing members |
| Low self-esteem on the part of free-riders |
| Absence from group work |
| Others |
| Class size |
| Workload |
| Lack of measure on discipline issues from school administration |

Table 3. Free-riders management and assessment challenges.

| Item | Test value | t | P | $\eta^2$ |
|------|------------|---|---|---------|
| 16   | 2.73       | -2.5 | .013 | .04     |
| 17   | 3.55       | 5.3 | .000 | .16     |
| 18   | 3.30       | 3.1 | .002 | .06     |
| 19   | 3.29       | 2.8 | .006 | .05     |
| 20   | 2.46       | -5.6 | .000 | .18     |
| 21   | 3.57       | 5.9 | .000 | .19     |
| 22   | 3.32       | 3.9 | .000 | .10     |
| 23   | 2.50       | -6.5 | .000 | .22     |
| 24   | 2.67       | -2.9 | .005 | .05     |
| 25   | 2.50       | -4.9 | .000 | .14     |
| 26   | 2.63       | -4.2 | .000 | .11     |

Table 3. Free-riders management and assessment challenges.
The third interviewee (T3) also pointed out that the assessment attempt she used to practice was insignificant and did not guarantee individual accountability and reduce free-riding. About this issue, she further affirmed the following:

I know that there are non-contributing individuals in group work. But I do not think I have devised assessment methods to assess free-riders and ensured individual accountability except for negligible attempts. I incorporate issues of group work into tests/quizzes to let them give attention to the tasks. In addition, I used to check individual contributions through oral presentation though it is infrequent due to the time-consuming nature of the oral presentation.

The fourth interviewee (T4) as well explained he used to make observations while students do the group work. Besides, he mentioned that he also uses peer assessments to reduce free-riding in group work. Yet, he mentioned that his attempts were infrequent, and thus may not be enough. However, the fourth interviewee used to give marks according to the rating of the peers to reinforce the free-riders to do their best in the group.

Although the interviewed teachers reported that they have not assessed free-riders and have not ensured individual accountability, they all mentioned that they used to offer timely feedback on the group work assignments. They reported that timely feedback is a learning opportunity.

3.4.2. The management of free riders in group work

The interviewees were also interviewed on their management of free riders in group work at least to reduce them if not eliminated. First, they were interviewed on how they form group work. All of them unanimously reported that they prefer and form heterogeneous grouping. Accordingly, they usually form a heterogeneous group as it is a blend of different abilities from clever, average and poor students. Besides, the teachers informed that they nominate group leaders from top students and secretaries from either category.

Although the interviewed teachers reported that they form a heterogeneous group and nominate a group leader and secretary of the group, three of the interviewees mentioned that they do not share group work tasks among members. Instead, they reported that they allow the group to share among them. However, the third interviewee (T3) stated that she sometimes shares the tasks among the group members. Direct words of the interviewee (T3), state that:

Although I leave the responsibility to group leaders and secretaries, I sometimes share the tasks among the group members and make them accountable for their share and the entire group as well.

Concerning the management of free riders in group work, two of the interviewees reported that they used to teach the group the need to do one’s share of the group work. The first interviewee (T1) stated ‘I instruct them on the needs of working together and on the importance of doing their share of work’. Similarly, the second interviewee (T2) explained that:

Group work is a sort of swimming or sinking together. As a result, I mostly inform them they are jointly responsible for both the success and failure. Thus, I teach them each has to do the share they are given for the success of the group as well.

The third interviewee (T3) also claimed that she used to motivate the students to do their share and be responsible. Besides, she used to inform them of the need to work together, and specifically stated:

I had no other means to manage free-riding than I do to manage the group work. I used to motivate them to work on their share and be responsible for both the individual and group output. Besides, I inform them that unity and team spirit is essential.

Moreover, the fourth interviewee (T4) affirmed that he used to specify the contribution required of the group though he did not share tasks among members of the group. As well, he used to go round and monitor the group to involve the free-riders in the tasks. On top of this, all the interviewees reported that they insist the students report the non-contributing members of the group to them.

Regarding equitability and fairness of tasks distribution and marks of group work, three of the interviewees stated they do not feel there is an equitable and fair distribution of tasks and marks since they do not share tasks among members fairly and do not offer unequal marks for unequal contributions. Nevertheless, the third interviewee (T3) mentioned that she sometimes used to share tasks among the group members though she did not feel there is fairness in the issues mentioned. Specifically, she uttered the following:

I sometimes share the tasks among the group members. This may not be enough to conclude that there is a fair distribution of tasks that ensures equitability of tasks among them. However, I see that there is no fairness in the assessment since I give equal marks for unequal contributions.

Therefore, it seems that there is no equitability and fairness in task distribution and mark allotment of group work.

3.5. Challenges faced in the management and assessment of free riders in group work

About challenges teachers face in the management and assessment of free-riders in group work, the interviewees reported the various challenges they encountered in group work. The second interviewee (T2) underlined insufficient support and follow-up as chief challenges, and stated the following:

There are several challenges teachers face in the management and assessment of free-riders in group work. For instance, as teachers, our support and follow-up of the group work are not sufficient. I do not think I have supported the group as a whole and the free-riders in particular. Besides, I think I have not made enough follow up.

Besides, they mentioned workload and class size are the other challenges that impeded their attempts to make an intensive follow-up to reduce free-riding in group work. The third interviewee (T3) in particular elaborated on the situation and stated as indicated below:

Well, there may be many challenges teachers face in the assessment and management of free-riders in group work. In my experiences and endeavor, I observed that class size and workload are the main concern. It is hard to assess and follow up with individuals in group work since I am tied with the teaching load. On top of this, class size is the other challenge. If I keep on monitoring and assessing free-riders, I fell short of time to cover the curriculum I am supposed to cover.

Moreover, the interviewees reported that they have not got a course or on-job training on the assessment and management of free-riders in group work. To this effect, they feel that they do not have sufficient skills in the assessment and management of free-riders in group work. Furthermore, the interviewees pointed out that there is a lack of interest to learn on the part of the free riders which might attribute to several reasons far from the scope of this study. Similarly, students' failure to report those who do not contribute their share of work also challenged teachers’ assessment and management of free-riders in group work.

4. Discussion and conclusions

This section introduces the discussion and conclusions of the study. Besides, it highlights the limitations of the study.
4.1. Discussion

Interweaving the results from both tools, it seems that teachers' management strategies of the free riders in group work are encouraging although there are some inadequacies. Accordingly, the results disclosed that the teachers favored and composed mixed ability groups and assigned group leaders and secretaries along with the students. Mixed ability grouping, according to Cogshall (2010), maximizes interaction among group members and directs to better learning for all students. Nevertheless, the result divulged that the teachers fall short of sharing tasks among members of the group. Along with this, it was found that the teachers considered their distribution of tasks and mark inequitable and unfair. In support of this, previous works showed assigning a task to the entire group instead of dividing for each group member, resulted in harboring free-riding while sharing of tasks reduced free riding and promoted individual accountability and greater learning gains (Bailey et al., 2012; Chang and Brickman, 2018; Serić and Frančićević, 2018).

Besides, the result unveiled that teachers continually made the students aware of the need to do a collective share of the group work along with motivating and encouraging them to do their share and be responsible. Previous works also confirmed that raising the awareness of the students on what to do in group work reduces free-riding (Aggarwal & O’Brien, 2008; Björjesson et al., 2006; Hall and Buzwell, 2012). As well, teachers’ attempt of raising students’ awareness is very important that the success of the group lies on members’ knowledge of “sink or swim together, and if one fails, they all fail” (Johnson et al., 1994, p. 6).

As well, the study made known that teachers used to insist the students encourage the free riders to work on their share of the group work and report if not. Similar to this finding, early works also indicated involving students to play active roles and warning and reporting group members who do not engage could reduce free-riding (Davies, 2009; Fellenz, 2006; Maiden and Perry, 2011). Moreover, the results also pointed out that teachers used to go around and monitor the groups while working in the classroom though this may not be enough management strategy. In support of this, El-Massah (2017) underscored teachers’ continuous monitoring of group work is a successful strategy in influencing individual effort and is also indispensable to managing free riders.

In summing up, assigning roles, ensuring individual accountability, fostering positive interdependence among group members, and giving assessments reduce free-riders (Lin, 2006), and increase engagement on tasks (Johnson et al., 1994) if used properly. Gibbs (2009) stated that group work has the potential to engage learners if the assessment influences the required behaviors of individuals in group work. The author stated that ‘group work has the potential to measurably improve student engagement, performance, marks, and retention and usually succeeds in achieving this potential provided that there are associated assessment mechanisms that leverage appropriate student behavior. In the absence of such assessment mechanisms these benefits may well not materialize (p. 1)’

The study revealed that the assessment of free-riders in group work is promising and yet inadequate that teachers attempted to assess the group work process though they discredited the individual input to the group work and proffered the same mark to all regardless of their differential inputs. This, in turn, impinged on individual accountability and fairness of the assessment. In association with this, previous works showed that offering the same mark for the whole members of the group regardless of differences, harbors free-riders while the assessment of group process, in which the teachers closely monitored and assessed individual contributions reduces free-riders (Cheng and Warren, 2000; Dycud, 2001; Hall and Buzwell, 2012). Discrediting individual effort (in the group work process) harbors free-riding and pause questions on the essence of group work and the fairness of assessment (Price et al., 2006). Besides, it discourages equitable contribution and engagement of students in group tasks.

Concerning the assessment tools teacher employed to assess the group work process, the results indicated that teachers used oral questioning, tests/quizzes from the contents of group work to reinforce the group work process, observations while students do the group work, and peer assessments infrequently while they applied timely formative feedback recurrently. The teachers’ efforts to use the stated tools need to be encouraged though they failed to grade them according to their contributions to the group work. Studies showed that giving quizzes reinforces the students to actively participate in their learning within the group and precisely mirrors which students engaged or disengaged in the group work (Lord, 1998). Besides, peer assessment of individual contribution to group work improved the active engagement of students with the learning tasks (Johns-Boast, 2010) as they are empowered to take responsibility for their learning (Bailey et al., 2012; Chang and Brickman, 2018). As well, peer assessment reduced free-riding (Roberts and McNerney, 2007) satisfying students who carried out their share while penalizing free-riders (Davies, 2009; Hall and Buzwell, 2012) and eliminating free-riders. Such delegation of authority and involvement of students enhances better learning and engagement as well (Cohen, 1994).

Besides, the study showed that teachers employed timely formative feedback frequently on group work tasks. The provision of timely formative feedback on group work tasks enhances to tracking of group members and keeps them accountable for the tasks they were given and reduces free riding. Concerning this, Brooks and Ammons (2003) underlined that timely formative feedback at multiple points with multiple forms of assessment has the potential to reduce free-riding problems and direct students to perceive group work experiences more usefully.

About the challenges teachers faced in the management and assessment of free-riders in group work, the results showed that teachers’ workload and class size are found to be the main factor that impeded their attempts to make an intensive follow-up and assessment to reduce free-riding in group work. Besides, lack of sufficient skills in the management and assessment of free-riders in group work was the other challenge reported. Previous works also evidenced that teachers’ workload and class size (Gedamu and Shewangezaw, 2020a; 2020b), lack of knowledge of how to manage group work in general, and that of free-riders, in particular, are the challenges teachers faced (Gedamu and Shewangezaw, 2020a, 2020b; Davis, 2009; Gillies and Boyle, 2010; Lotan, 2008; Ross and Rolheiser, 2003).

Similarly, lack of skills in group work assessment is the other challenge teachers encounter in their attempt to assess group work (Gedamu and Shewangezaw, 2020a, 2020b; Cheng and Warren, 2000; Frykedal and Chiriac, 2011; Galton et al., 2009; Le et al., 2018; Kutnick et al., 2005). Moreover, the results also revealed that lack of interest to learn and failure to report free riders were the foremost on the part of the free riders. Unless students play active roles of encouraging, warning, and reporting group members who do not engage, group work will keep on harboring free-riding (Davies, 2009; Fellenz, 2006; Maiden and Perry, 2011) disengaging the active and the brilliant participants of the group. This implies that group work itself is a challenge that harbors free-riders unless it is handled with knowledge and care.

4.2. Conclusions

Teachers’ management and the assessment of free-riders seem to be encouraging and yet inadequate. The study concluded that teachers used to form mixed ability grouping, go round and monitor, motivate, and encouraged the group to do their share and take responsibility although they practically fall short of sharing tasks among members of the group. Although teachers attempted to apply various management strategies, it seems that the attempts might be ineffective as they fall short of sharing the tasks for each group member, a crucial aspect. This may foster free-riding and disengagement (off-task) behavior.

Besides, it seems reasonable to conclude that teachers attempted to use oral questioning, tests/quizzes, observations, and peer assessments infrequently while they offered timely formative feedback recurrently. Besides, teachers attempted to assess the group work process though they
proffered the same mark to all discrediting the individual input to the group work. Thus, it appears that giving the same marks to all regardless of the students’ contributions to a group project. Teach. High. Educ. 5, 243–255.

Cheong, C., 2010. From group-based learning to cooperative learning: a meta-cognitive approach to project-based group supervision. Inf. Sci.: Int. J. Emerging Trans.

Chirica, E.H., Frykeldal, K.F., 2019. Teachers’ talk about group work assessment before and after participation in an intervention. Creat. Educ. 10, 2045–2068.

Coggshall, B., 2010. Assigning individual roles and its effect on the cooperative learning strategies. Mathematical and Computing Sciences Masters. Paper 99. https://sherpub.s.
fedu/mathcs_etd_masters/99.

Cohen, E., 1994. Restructuring the classroom: conditions for productive small groups. Rev. Educ. Res. 64 (1), 1–35.

D’Arcy, L., Geoghegan, E., Gibson, R., Hines, A., MacAnaney, O., 2016. An Exploration of Fairness in the Assessment and Process of Student Group Work. Technological University, Dublin. https://arrow.tudublin.ie/1cgpqdpnr.

Davies, M., 2009. Group work as a form of assessment: common problems and recommended solutions. High Educ. 58, 563-584.

Devine, D., 2002. A review and integration of classification systems relevant to teams in organizations. Group Dynam.: Theory Research and Practice 6, 291–310.

Dyrey, M.A., 2001. Group projects and peer review. Bus. Commun. Q. 64 (4), 106–112. El Massah, S.S., 2017. Addressing free riders in collaborative group work: the use of mobile application in higher education. Int. J. Educ. Manag. 253–259.

Fellenz, M.R., 2006. Toward fairness in assessing student group work: a protocol for peer evaluation of individual contributions. J. Manag. Educ. 30 (4), 570–591. Frykdel, K.F., Chirica, E.H., 2011. Assessment of students’ learning when working in groups. Educ. Res. 53, 331–345.

Galtung, M., Hargreaves, L., Pell, T., 2009. Group work and whole-class teaching with 11- to 4-year-olds compared. Camb. J. Educ. 39, 118–140.

Gedamu, A., Shewangezaw, G.L., 2020b. Teachers’ beliefs and practices of cooperative group work assessment: selected secondary school teachers in focus. Aust. J. Teach. Educ. 45 (11), 1–16. Retrieved from. https://ro.ecu.edu.au/ajte/vol45/iss11/1.

Gedamu, A.D., Shewangezaw, G.L., 2020a. Teachers’ management and assessment of free riders in group work in responsible and engaging learning is important. To this effect, the concern that NNPRS education offices should organize on-job training on the management and assessment of group work in general and the free riders in particular. Early works also recommended that teachers need to be trained in the strategies required to manage small groups (Gillies, 2003; Gillies and Boyle, 2010; Johnson and Johnson, 2003) since free-riding emanates from teachers’ failure to adequately ‘manage’ the group process. Besides, teacher education institutions of Ethiopia should re-think their curricula to include group work management and assessment issues in broad and free-riders in particular in their teacher preparation endeavor, if need be. Moreover, the Ethiopian Ministry of Education should prepare a group work management and assessment policy or manual to maintain uniform group work management and assessment practices across the country and grade levels.

This study has its limitations. One limitation is that the study was carried out on teachers selected from only five public schools at NNPRS, Ethiopia. Further studies need to be conducted on a larger sample size at different educational levels and localities to generalize the findings. Moreover, future studies on a similar issue should consider whether the participants’ gender, educational levels, teaching experiences, and fields of study could bring variations in the results of this study.

Declarations

Author contribution statement

Abate Demissie Gedamu: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Gutu Lemna Shewangezaw: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data.

Funding statement

This work was supported by Arba Minch University College of Social Sciences and Humanities (GOV/AMU/TH23/CSSH/DELL/06/2013).

Data availability statement

Data will be made available on request.

Declaration of interest’s statement

The authors declare no conflict of interest.

Additional information

Supplementary content related to this article has been published online at https://doi.org/10.1016/j.heliyon.2022.e09742.

References

Aggarwal, P., O’Brien, C.L., 2008. Social loafing on group projects: structural antecedents and effect on student satisfaction. J. Market. Educ. 30 (3), 255–264.

Bailey, C.P., Minderhout, V., Loertscher, J., 2012. Learning transferable skills in large lecture halls: implementing a POGIL approach in biochemistry. Biochem. Mol. Biol. Educ. 40 (1), 1–7.

Balonc, L., Brody, C.M., 2017. Cooperative learning: exploring challenges, crafting innovations. J. Educ. Teach. 43 (3), 274–280.

Bejersten, P., Hamidian, A., Kuhlin, L., et al., 2006. Free-riding in group work. Mechanisms and countermeasures. J. Manag. 268–272. http://www.libh.s/fileadmin/in/ih/genombrott/konferens2006/p_o_b_jessen_ml.

Brooks, C.L., Ammons, J.L., 2003. Free-riding in group projects and the effects of timing, frequency, and specificity of criteria in peer assessments. J. Educ. Bus. 78, 268–272.

Chang, J., Brickman, P., 2018. When group work don’t work: insights from students. CBE-Life Sci. Educ. 17 (52), 1–17.

Cheng, W., Warren, W., 2000. Making a difference: using peers to assess individual students’ contributions to a group project. Teach. High. Educ. 5, 243–255.

Cheong, C., 2010. From group-based learning to cooperative learning: a meta-cognitive approach to project-based group supervision. Inf. Sci.: Int. J. Emerging Trans.
Lotan, R.A., 2008. Developing language and mastering content in heterogeneous classrooms. In: Gillies, R.M., Ashman, A., Terwel, J. (Eds.), The Teacher’s Role in Implementing Cooperative Learning in the Classroom. Springer, Brisbane, pp. 187–203.

Maiden, B., Perry, B., 2011. Dealing with free-riders in assessed group work: results from a study at a UK university. Assess Eval. High Educ. 36 (4), 451–464.

McArdle, G., Clements, K., Hutchinson-Lendi, K., 2005. The Free Rider And Cooperative Learning Groups: Perspectives From Faculty Members.

Price, K.H., Harrison, D.A., Gavin, J.H., 2006. Withholding inputs in team contexts: member composition, interaction processes, evaluation structure, and social loafing. J. Appl. Psychol. 91, 1375–1384.

Roberts, T., McInnerney, J., 2007. Seven problems of online group learning (and their solutions). Educ. Technol. Soc. 10 (4), 161–183.

Ross, J., Rolheiser, C., 2003. Student assessment practice in co-operative learning. In: Gillies, R.M., Ashman, A.F. (Eds.), Co-operative Learning. The Social and Intellectual Outcomes of Learning in Groups. RoutledgeFalmer, London.

Ruél, G., Bastiaans, N., 2003. Free-riding and team performance in project education. Int. J. Manag. Educ. 3 (1), 26–37. http://www.rug.nl/research/portal.

Seric, M., Pranitevic, D.G., 2018. Managing group work in the classroom: an international study on perceived benefits and risks based on students’ cultural background and gender. J. Contemp. Manag. Iss. 139–156.

Sharan, Y., 2010. Cooperative learning for academic and social gains: valued pedagogy, problematic practice. Eur. J. Educ. 45, 300–310.

Swaray, R., 2012. An evaluation of a group project designed to reduce free-riding and promote active learning. Assess Eval. High Educ. 37 (3), 285–292.