

Collaborative Group Work in Online Learning: The Contribution of Student's Self-Regulation and Emotion Regulation

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Abstract. Despite growing research on collaborative group work, there still is limited research on how group members productively regulate collaborative processes, particularly in online learning settings. The purpose of this study is to identify the impact of students' self-regulation and emotion regulation on collaborative group work in the online learning environment. This study included 157 higher education students who studied in collaborative group work settings during online learning at Universitas Negeri Medan. Data were collected using self-administered questionnaires and analysed using multiple linear regression. The findings of this study indicated that self-regulation and emotion regulation during online learning have a 62.1% simultaneous impact on collaborative group work. Self-regulation, in particular, was discovered to have the greatest impact (54.1%). Furthermore, the t-test results demonstrate that the tendency to regulate emotions through expressive suppression has a negative impact on collaborative group work.

Keywords: Collaborative Group Work, Self-Regulation, Emotion Regulation

1 Introduction

During the Covid-19 pandemic, the Indonesian government, through the Ministry of Education and Culture, mandated that all educational units shift from face-to-face to online learning. This policy was put in place to lower the risk of the Covid-19 virus spreading. It is outlined in the notification letter No. 36962/MPK.A/HK/2020 issued by the Minister of Education and Culture, which mandates online learning activities from April 2020 to the present. Online learning allows students to study at their own time and in their preferred location. As a result, students who participate in online learning have a greater need for autonomy in their studies [1]. During online learning, students must actively plan their learning, determine their learning objectives, and evaluate their learning processes and outcomes. These activities are also referred to as self-regulated online learning [2].

According to Zimmerman [3], students with strong self-regulation will actively participate in their learning process. They can regulate themselves well beginning with learning preparation, continuing through the learning process, and actually ended with the evaluation of their learning and achievement [4]–[6]. As a consequence, even if this role is not explained to students, self-regulation plays an important role in learning [7]. Furthermore, Schraw [8] suggested that self-regulation motivates learners to become impartial and independent learners, allowing them to continue their education as lifelong learners with less support from lecturers.

For the purposes of this study, self-regulation is operationally regarded as a combination of behaviour patterns that include awareness, understanding, and cognitive control, decent time

and resource management, the ability to regulate effort, including the ability to maintain focus and complete tasks, and the ability to identify the need for help and to pinpoint and use sources of help [6], [8], [9].

Students' experiences and feelings shift dramatically during online learning. This drastic change in lifestyle is undoubtedly difficult, particularly in terms of how well a student can regulate his emotions during the learning process. Emotions are vital for survival because they alert one to actively pursue out benefits and avoid downsides. Extremely strong emotions, on the other hand, are not always versatile. Successful emotion regulation is linked to better such as increased self-regulation and psychological well-being [10]. Emotion regulation approaches can have varying effects on personal experiences, cognitive processing, behavioural patterns, and well-being [11].

People use different emotion regulation strategies, such as cognitive reappraisal and expressive suppression [12]. The key aim of emotion regulation are to understand and identify one's emotions, manage and regulate them into more positive emotions, interpret emotions in peer interactions in a more healthy manner, and make better decisions [13]–[16]. Furthermore, Pekrun [13] assumed that positive and negative feeling could have a major impact on task-related metacognition, involvement, and subsequent on-task motivation. These characteristics are important in supporting one's self-regulation and predicting one's ability in collaborating in group work.

Collaborating with peers has been shown to improve learning and achievement in research findings. As a direct consequence, encouraging and promoting collaborative group work is extremely advantageous [8], [9]. Many teachers are trying to integrate online groups into their teaching methods as a result of digital advancements in education. Some research findings also suggested that collaborative group work is significant in fostering students' self-regulation in the classroom context. According to Zimmerman [17] and Greene, et. al [18], the best strategy for improving students' self-regulation is to give them opportunities to practice with peer group. This importance has the inverse result; therefore it is safe to conclude that the collaborative group work approach is associated to the students' ability of self-regulation and emotion regulation.

The collaborative group work approach fosters student development and allows them to put their newly acquired skills to use. Its learning environment required students to cultivate self-awareness, self-management, social awareness, relationship skills, and responsible decision-making abilities (Durlak et al. 2007). Collaborative group work is critical for students to become more involved in their learning, more independent and accountable for their learning, and to attain better self-regulation in their achievement [20], [21]. This approach promotes interaction and fosters a collaborative and respectful culture among students.

The majority of previous empirical findings, however, have focused on collaborative group work in face-to-face learning settings. Therefore, this study attempts to place a greater emphasis on collaborative group work approach in online learning environments. The purpose of this study is to determine the impact of students' self-regulation and emotional regulation on their ability to collaborate in group work settings, especially in online learning environments. This study is expected to increase understanding of self-regulation and emotion regulation as predictors of students' collaborative group work abilities.

2 Research Methods

A quantitative research approach was used in this study. The independent variable consisted of two variables: the student's ability to self-regulate and the student's emotional regulation. Furthermore, the ability of students in collaborative group work is the independent variable in

this study. In this study, the ability of students to self-regulate in online learning was measured using a 36-item self-regulated online learning questionnaire [2]. The Emotion Regulation Questionnaire (ERQ) developed by Gross and John [22] was used to assess emotion regulation ability. It is a 10-item scale aimed at assessing students' ability to regulate their emotions in two ways: 1) cognitive reappraisal and 2) expressive suppression. Furthermore, in this study, the dependent variable was measured using a collaborative group work questionnaire. This questionnaire contains 32 items that accommodate four dimensions of collaborative group work, notably: 1) Cooperating 2) Coordination, 3) Communication, 4) Reassurance, and 5) Conflict Resolution.

The questionnaires were completed by 157 students who participated in collaborative group work during online learning. Purposive sampling was used as a sampling technique. In this study, the two independent variables and the dependent variable taken a series of classical assumption tests, including the normality test, linearity test, multicollinearity test, and heteroscedasticity test. Based on the results of the classical assumption test, it was confirmed that both the independent variables and the dependent variable in this study were normally distributed, linear, and no indications of multicollinearity or heteroscedasticity, indicating that the requirements for conducting multiple linear regression analysis were met and could be carried out.

3 Results and Discussion

Multiple Regression Analysis

The results of multiple regression analysis are summarized in Table 1.

Table 1. The results of multiple regression analysis

| R | R Square | Adjusted R Square | Sig. | F_{value} | F_{table} |
|----------|-----------------|--------------------------|-------------|--------------------------|--------------------------|
| 0.793 | 0.629 | 0.621 | 0.000 | 86.287 | 2.68 |

According to Table. 1 above, the significance value (Sig.) in the F-test is $0.000 < 0.05$, and the F_{value} value is $86.287 > 2.68$ (F_{table}), therefore, similar to decision making in the F-test, it can be concluded that the hypothesis in this study is accepted, or, in other words, self-regulation and emotional regulation affect collaborative group work ability simultaneously. Table 1 also has shown that self-regulation and emotion regulation simultaneously contributed 62.1% to the collaborative group work ability variable in this study.

Furthermore, a t-test was performed to determine the partial effect of the variables, as shown in the Table. 2, see below:

Table 2. The results of partial t-test

| Variable | Regression Coefficients | t_{table} | t_{value} | Sig. | Hypothesis Conclusion |
|---|--------------------------------|--------------------------|--------------------------|-------------|------------------------------|
| Constanta | 77.508 | 1.660 | | | |
| Self-Regulation (X_1) | | | 12.231 | 0.000 | Accepted |
| Cognitive Reappraisal Emotion Regulation (X_2) | | | 2.640 | 0.009 | Accepted |
| Expressive Suppression Emotion Regulation (X_3) | | | -0.701 | 0.484 | Rejected |

According to the t-test results, the Self-Regulation (X_1) variable has a significance value (Sig.) of $0.000 < 0.05$ and a t_{value} of $12.231 > 1.660$ (t_{table}), as a consequence, we can conclude that the first hypothesis is accepted. It thus means that the self-regulation variable (X_1) effects the collaborative group work ability (Y). Furthermore, the Cognitive Reappraisal Emotion Regulation (X_2) variable has a Sig. of $0.009 < 0.05$ and a t_{value} of $2.640 > 1.660$ (t_{table}), It is possible to conclude that the variable Cognitive Reappraisal Emotion Regulation (X_2) influences the collaborative group work ability (Y).

Lastly, with a significance value (Sig.) of $0.484 > 0.05$ and a t_{value} of $-0.701 < 1.660$ (t_{table}), it can be concluded that the Expressive Suppression Emotion Regulation (X_3) variable has no effect and is negatively related to collaborative group work ability (Y). Following that, Table. 3 below describes the results of statistical calculations for the effective contribution and relative contribution of self-regulation variables and emotional regulation that affect the collaborative group work ability variable.

Table 3. The values of effective contribution and relative contribution

| Variable | Beta Coefficient | Correlation Coefficient | Effective Contribution (%) | Relative Contribution (%) |
|---|------------------|-------------------------|----------------------------|---------------------------|
| Self-Regulation (X_1) | 0.703 | 0.782 | 54.1 | 87 |
| Cognitive Reappraisal Emotion Regulation (X_2) | 0.164 | 0.498 | 8 | 13 |
| Expressive Suppression Emotion Regulation (X_3) | -0.038 | 0.074 | -2.96 | -4.7 |

Based on the data analysis above, it is known that the self-regulation variable (X_1) has the effective contribution value of 54.1% and the relative contribution value of 87 %. In comparison, the variable Cognitive Reappraisal Emotion Regulation (X_2) has the effective contribution value of 8% and the relative contribution value of 13%. Nevertheless, the variable Expressive Suppression Emotion Regulation (X_3) has an effective contribution value of -2.96% and a relative contribution value of -4.7%. Based on the findings of the above analysis, it is reasonable to suggest that the self-regulation variable (X_1) has a greater influence on the collaborative group work ability variable (Y) than the two emotional regulation variables (X_2 and X_3 respectively).

We proposed a self-regulated and emotional regulation learning approaches for supporting collaborative group work learning by examining the self-regulated online learning ability and emotion regulation tendency of students who took classes with group work settings. The findings revealed that self-regulation and emotional regulation had a 62.1 % simultaneous influence on the collaborative group work ability variable. While the remaining 37.9 % is influenced by variables not investigated in this study. According to the findings of the data analysis, self-regulation has the strongest effect, with an effective contribution of 54.1 % and a relative contribution of 87%. As a result, students with better self-regulation tend to have better collaborative group learning abilities.

We discovered that self-regulation ability and cognitive reappraisal approach in emotion regulation can have a significant impact on collaborative group work ability. This was line with the findings of Zheng, Li, and Huang [23] and Jarvela and Hadwin [24], who discovered that a regulated learning strategy, particularly in social contexts, enhances collaborative group functional ability.

The results of the coefficient of determination analysis for the cognitive reappraisal emotion regulation variable indicate that emotional regulation linked with cognitive reappraisal has a simultaneous positive influence on a person's ability to work in groups with an effective contribution value of 8% and a relative contribution value of 13%. Individuals who seem to have cognitive reappraisal emotion regulation tend not to have difficulty learning in collaborative groups. The findings of this study support Han's [16] conclusion that individual emotional intelligence and social bonding among students become important factors in facilitating positive interactions in online learning and potentially reducing transactional distance between people. Gross [11] explained that cognitive reappraisal is an assertive emotion regulation technique that takes place in the early stages of emotion experience. This strategy aims to alter emotional experiences by modifying cognitive processes, which involve the re-interpretation of emotional events.

The coefficient of determination analyses prove that the variable expressive suppression emotion regulation has no impact on a person's ability to learn in groups and has negative values with an effective contribution value of -2.96 % and a relative contribution value of -4.7 %. Individuals with expressive suppression emotion regulation have weak collaborative group work skills. Expressive suppression approach A response-focused emotion regulation strategy is expressive suppression. It suppresses emotional responses (such as facial gestures) that are about to appear or are already happening in order to regulate emotion experience [22]. If students use an expressive suppression approach in online learning where there are almost no face-to-face meetings, interaction will be extremely difficult. As a consequence, they will be unable to rely on one another and eventually will be unable to collaborate in group work effectively.

4 Conclusion

We can conclude that self-regulation and emotional regulation have simultaneous influence on the collaborative group work ability variable. If compared to expressive suppression, the type of emotion regulation with cognitive reappraisal has the greatest impact on a person's ability to collaborate in group work. Several flaws are evident in this study. This study's findings were entirely based on self-report data collected via a questionnaire. As a necessary consequence, future research should be able to use various instruments to measure the collaborative group work process. Thus, the research findings can provide a comprehensive picture of the challenges encountered in collaborative group work.

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