RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND VIETNAMESE STUDENTS' GROUP WORK RESULTS: RESEARCH ON MEDIATING FACTORS SELF - MANAGED TEAMS AND CROSS-FUNCTIONAL TEAMS

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Abstract

This study focuses on the aim of measuring the impact of the direct and indirect relationships between Emotional Intelligence and University students' group work results, in which the mediating determinants in the indirect relationship were studied, practicing two factors of self-managed teams and cross-functional teams. Data from 372 Economics students from different universities in Hanoi, Vietnam was collected using questionnaire systems. The research team then determined and analysed to conclude that emotional intelligence strongly affects the groups' work results, even though the cross-functional team factor does not impact the mediation relationship. Limitations and future directions, as well as implications for research and practice, are discussed.

Keywords: *Emotion Intelligence, cross-functional teams, self-managed teams, students' group work results.*

1. Introduction

A group is a combination of two or more than two interactive individuals depending on each other to achieve common objectives (Morgan & Krueger, 1993). With group members having the following characteristics: (i) have a shared collective identity, (ii) have common goals, (iii) are interdependent in terms of their assigned tasks or outcomes, (iv) have distinctive roles within the team, and (v) are part of a larger organizational context that influences their work and that they, in turn, can influence (Kozlowski & Ilgen, 2006; Nahrgang et al., 2009) .

Through the benefits in many practical contexts was the importance of group working proved. Furthermore, many documents also confirm the advantages of working in groups

(Marin-Garcia & Lloret, 2008). Firstly, working in groups let students handle the work relating to using expertise, evaluating knowledge to solve a specific issue (Galbraith & Webb, 2013; Pineda & Lerner, 2006). Secondly, students shall have an opportunity to experience and acquire skill sets that they need in the future not only for their career but also for their daily activities. Thirdly, the positive effects of working in groups directly influence students' performance, motivation, and attitude in school (Gatfield, 1999; Kalliath & Laiken, 2006).

Research in recent years increasingly focused on cooperation among students in classes (Gillies & Boyle, 2010, 2011). Initiated from the fact approved by researchers and educators that efficiency in the students' group work result is affected by many distinctive factors. (Gujral & Ahuja, 2011; Horwitz, 2005; Kirkman & Rosen, 1999). Zhou & Wang (2016) showed that one of the major deciding factors in ensuring the operation's efficiency is emotional intelligence. Troth et al. (2012) also indicated that emotional intelligence was vital when it came to working efficiency and group cooperation.

Gujral and Ahuja (2011) gave a conclusion about the thorough similarities between self-managed teams and cross-functional teams. Working as self-managed teams can clarify the common goals, required crucial objectives, and better the alignment of goals within groups with the main goals of organizations. However, working as a cross-functional team provides more advantages such as accelerating the completion, supplying more strength to overcome challenging tasks, enhancing creativity, and helping members focus more on customers, organizing students to study are crucial factors improving group work's effectiveness.

With the mentioned analysis, this study was undertaken for two purposes. Firstly, to analyse direct and indirect relationships between emotional intelligence and University students' group work results, in which the mediating determinants in the indirect relationship were studied, practicing two factors of self-managed teams and cross-functional teams. Secondly, to give recommendations for administrators, lecturers, and students to maximize the effectiveness of group working in Vietnam's universities.

Relationship between emotional intelligence and group work results

Emotional Intelligence

Emotional Intelligence has been a particular research topic that interests many scholars over the past decades, rooted in Gardner's theory of multiple intelligence (Gardner, 1983). Goleman (1998) defined emotional intelligence as the understanding of emotion on one's own and that of others and using them in decision-making. Mayer and Salovey (1997) defined EI as "The ability to accurately perceive, evaluate and express emotions; the ability to reach and/or create emotions when they think; ability to understand emotions and knowledge about emotions; and the ability to regulate emotions to promote emotional and intellectual development".

Emotional Intelligence model (EI)

The conceptual framework that underpins this study is based on the work of Mayer and Salovey (1997) concerning the four branches of the EI model (Mayer & Salovey, 1997):

1. Emotional Awareness

2. Emotion's Usage

3. Emotional Understanding

4. Emotional Control

Emotional Awareness (EA) is understood as the ability to self-perceive the emotions of self and that of others accurately.

Emotion's Usage (EU) is defined as the ability to use one's emotions to promote thinking, support judgment, thinking, and awareness about mood swings, leading to consideration in alternative attitudes and understanding about a change in state by using emotions to solve different problems.

Emotional Understanding (EUS) is the ability to help individuals understand emotions, causes, and development of emotions, including the ability to define, distinguish types of emotions, understand the complexity of emotions as well as patterns. emotionally: loss often entails boredom, anger removes fear...

Emotional Control (EC) is the capability for the individual to control their own emotions and organize their emotions.

Many earlier studies have confirmed a link between students' group work results and emotional intelligence, one of which is the work of Gujral and Ahuja (2011). According to these authors, emotional intelligence plays a significant role in how they collaborate and collaborate when team members work on a shared mission and goals. Meanwhile, McCALLIN & Bamford (2007) argue that the central elements of emotional intelligence such as self-awareness, self-management, social awareness, and social skills are the values of group work results. Emotional Intelligence can also improve team members' ability to communicate with each other (Stephens & Carmeli, 2016), be opened to opposing opinions, ideas and using emotions to increase team performance, and team decision-making (Clarke, 2010). The relationship between Emotional Intelligence and students' group work results in students is mentioned in the study by Brackett & Mayer, 2003. These authors examined the relationship between Emotional Intelligence and students' group work result in the medical-health educational environment. Emotional intelligence has been found to provide an opportunity for students to reflect on and apply group work skills well while doing practical exercises.

Previous studies have confirmed the relationship between the success of group work and EI, Muhammad (2014) including improvement of communication which increases the value of team productivity, enhances collaboration to achieve common goals (Pineda & Lerner, 2006), provide opportunities for students to reflect and well-applied group work skills while doing practical exercises (Muhammad, 2014). Therefore, the proposed research hypothesis is:

H1. Emotional Intelligence has a positive influence on student group work results.

Relationship among self-managed teams, cross-functional teams, EI, and group work results.

Self-managed teams are defined by Moravec *et al.* (1998) as a non-decentralized workgroup that handles specific areas or tasks within the organization. Bobek et al (2009) argue that self-managed teams are made up of individuals who self-regulate and are responsible for a number of activities such as planning, scheduling, performance evaluation, and continual improvement. In addition, self-managed teams are understood as groups where individuals are interdependent, and the team members can self-regulate their behaviour in relative tasks (Goodman & Kruger, 1988). Working as self-managed teams shall accelerate the efficiency and improve the final result (Liu et al., 2004). According to the idea, efficiency in group working includes high productivity (Kirkman & Rosen, 1999; Locke & Latham, 2002), good customer service (Shamsul et al., 2013); group work result includes superior quality (Locke & Latham, 2002; Lou, 2011); satisfaction in work (Locke & Latham, 2002; Marin-Garcia & Lloret, 2008), organization's commitment (Liu et al., 2004; Martinez-Pons, 1997). Based on the definition of Goodman *et al.* (1988), the authors argue that the student self-management team is a team where individuals are interdependent and team members have full discretion to decide on tasks such as work tasks, methods of doing work, and schedule activities.

Cross-functional teams are defined as a team of highly specialized teams, individuals from different functional areas within a company working together to achieve a particular goal. Cross-functional teams are used to develop new products (Bunduchi, 2009), transform organizations (Daspit et al., 2013), speed up market access (Daspit et al., 2013), and a host of other tasks. From the definition of Webber (2002), the authors argue that a student's cross-functional team is a team consisting of students with specialized expertise (or specialized knowledge), students from different disciplines in universities work together to achieve a specific goal and team members engage in shared leadership roles.

When comparing the relationship of Emotional Intelligence with self-managed teams and cross-functional teams, Gujral & Ahuja (2011) show a higher correlation of Emotional Intelligence with self-managed teams than cross-functional teams. That suggests that self-managed teams are smarter emotionally and emotionally intellectually, contributing to

excessive group work performance compared to cross-functional teams. This is explained by Gujral and Ahuja (2011) because the cohesion between the members of self-managed teams is higher than cross-functional teams. In addition, Kirkman and Rosen (1999) identified that self-managed teams help improve team productivity and Horwitz (2005) pointed out the diversity of knowledge in cross-functional teams positively affects performance due to the different perspectives each member brings to the team. This important interrelation leads us to pose the following hypotheses:

H2. Emotional Intelligence has a positive influence on self-managed teams of university students.

H3. Self-managed teams have a positive influence on students' group work results of university students.

H4. Emotional Intelligence has a positive influence on cross-functional teams of university students.

H5. Cross-functional teams have a positive influence on the group work results of university students.

2. Method

Sample and Procedure

The authors clarify the scales: emotional intelligence, self-managed team, cross-functional team, and students' group work results through in-depth interviewing with the subjects are university students and lecturers conducted within one hour in a designated location chosen by the interviewers.

To clarify the results collected from previous methods, the authors proceeded to create a form to initiate the inspection. Surveys used questions from the form are distributed and acquired from October to December of 2020. The content of the questionnaire is divided into two parts: the first part is to investigate the rate of agreement from the respondents about statements relating to Emotional Intelligence, self-managed team, cross-functional team, and students' group work results; the second part is to get to know more about respondents' information such as gender, frequency of joining and working in a group.

Table 1. Characteristics of the sample

Demographic information	Frequency	Number of respondents	Percentages (%)
Gender	Female	182	48.9
	Male	189	50.8
Year of students	1st	52	14.0

	2nd	101	27.2
	3rd	166	44.6
	4th	48	12.9
	Other	5	1.3
Frequency of working in groups	Never	2	0.5
	Rarely	10	2.7
	Sometime	96	25.8
	Usually	264	71.0

The authors also focused on universities having Economics as their primary major, including National Economics University, Foreign Trade University, University of Commerce, Economics University - National University, Academy of Banking. With 385 responses from university students, of which 372 later used for the study. The responses between genders do not differ significantly, respectively 50.8% and 49.2%. In terms of study time, Junior students account for the highest percentage of 44.6%, and most of the students also maintain the regular frequency of group working of 71.0% as shown in Table 1.

Procedure

A set of standardized questions about emotional intelligence, students' group work results, self-managed teams, cross-functional teams were used through a questionnaire survey to collect data from students in some economics universities in Vietnam. The authors have reached out to students in classrooms and public areas such as libraries, dorms, and canteens. The objectives of the study were briefly explained to the respondents, which enabled them to answer the survey accurately (Figure 1).
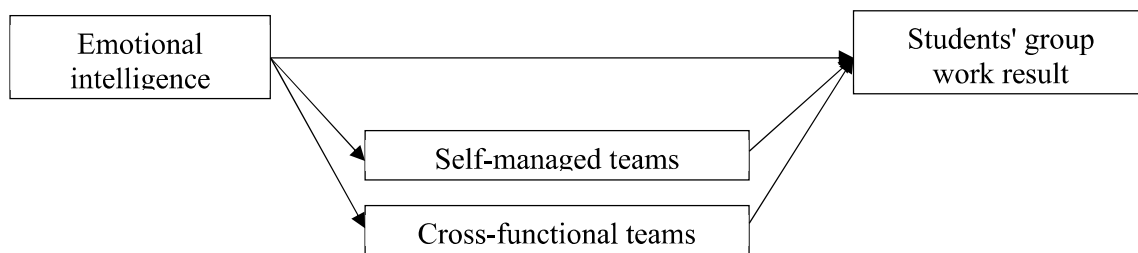
Figure 1. The conceptual model

Measures

Emotional Intelligence (EI): The 18-item scale was designed by Bar-On (1997); Goleman (1998) and Mayer & Salovey (1997) to examine four dimensions (emotional awareness - EA, using emotions - USE, understanding emotions - UDE and managing

emotions - ME) (α's = 0.865, 0.817, 0.888 and 0.849 respectively). A sample item is, "I am aware of personal feelings when I meet someone." USE1 was excluded due to the item-total correlation < 0.3. A confirmatory factor analysis (CFA) was conducted for the scale, and the result demonstrated an acceptable model fit: $\chi2$ = 256.666, df = 113, p = 0.000, CMIN/df = 2.271 (between 1 and 3) (Kettinger & Lee, 2005), CFI = 0.959 > 0.9, SRMR = 0.057 < 0.08, RMSEA = 0.059 < 0.06, PClose = 0.068 > 0.05 (Hu & Bentler, 1999) suggesting that the dimensions reflected the overall construct.

Self-managed teams (SMT) (Cronbach's alpha = 0,786): The scale was measured with Goodman & Kruger (1988) (α's = 0.949 and 0.786 respectively). A sample item is, "I am willing to express my opinion on issues even when the members of the group think differently." Each item was rated from 1 (strongly disagree) to 5 (strongly agree).

Cross-functional teams (CFT) (Cronbach's alpha = 0,786): The scale of cross-functional teams was assessed by using the 4-item developed by Daspit et al. (2013) and Webber (2002), including 'When others with my functional background are successful, I feel that all of us with the same functional background have been successful' (0,670).

Group work results (Cronbach's alpha = 0,876): This scale was designed by Volet & Mansfield (2006), has 6 items, including "The team worked together to complete tasks in a timely manner." (0,849), "The team acted with composure and control Prompts: Applicable emotions? Conflict management issues." (0,851).

Analyses

The authors established a question set about EI, self-manage team, cross-functional team, and students' group work result to start the survey and collect data from many Economics university students in Hanoi, Vietnam. After approaching and amassing answers, the authors analysed using the following main steps.

❖ *Firstly,* assessing the scale's reliability using Cronbach's alpha coefficient.

❖ *Secondly*, examining Explorative Factor Analysis (EFA) to evaluate variables' reliability.

❖ *Thirdly*, inspecting Confirmatory Factor Analysis (CFA) to determine the model and the scale.

❖ *Finally*, analyzing Structural Equation Modelling (SEM) with the assistance of AMOS 22.0 Software.

3. Results

Exploratory factor analysis (EFA)

After evaluating the reliability of the scales using Cronbach's alpha, a total of 25 items were used in exploratory factor analysis (EFA).

The results of testing the reliability of the scale by exploratory factor analysis showed that KMO = 0.901; Sig. (Bartlett test) = 0.000 < 0.005. The final results of the exploratory factor analysis are presented in Table 1.

Table 2. The results of exploratory factor analysis (EFA)

	Rotated Component Matrix[a]						
	Component						
	1	2	3	4	5	6	7
SMT2	0.881						
SMT3	0.859						
SMT4	0.824						
SMT5	0.791						
SMT1	0.782						
R5		0.757					
R1		0.736					
R6		0.711					
R2		0.710					
R4		0.694					
R3		0.657					
EUS2			0.881				
EUS3			0.842				
EUS1			0.750				
EUS5			0.728				
EUS4			0.727				
EA5				0.796			
EA2				0.747			
EA4				0.746			
EA3				0.642			
EA1				0.626			
EU4					0.886		
EU3					0.782		
EU2					0.780		
EU5					0.712		
CFT1						0.875	
CFT2						0.767	

CFT3						0.761	
CFT4						0.729	
EC3							0.849
EC1							0.802
EC2							0.760
Cumulative = 68,992%							
Total Variance Explained= 1.261							

Confirmatory Factor Analysis (CFA)

This research conducted a confirmation factor analysis (CFA) to confirm the variability of the variables in this study. These CFA results confirmed the satisfactory discriminatory value and showed no bias of the common method bias.

The model is consistent with the data: $\chi2$ = 789.731, df = 443, p = 0.000, CMIN/df = 1.783 (between 1 and 3) (Kettinger & Lee, 2005), CFI = 0.953 > 0.9, SRMR = 0.05 < 0.08, RMSEA = 0.046 < 0.06, PClose = 0.901 > 0.05 (Hu & Bentler, 1999).

The three important indicators of convergent validity are factor loadings (standardized estimates), the average variance extracted (AVE), and composite reliability (CR). The standardized estimates of each construct range from 0.603 to 0.963 and are statistically significant (p-values). AVE ranges from 0.507 to 0.791 and CR ranges from 0.800 to 0.950. According to Hair et al. (2010), the results of standardized estimates, AVE, and CR are all in the acceptable region, thereby providing support for convergent validities of constructs.

Structural Equation Modelling Analysis (SEM)

Structural equation modelling (SEM) suggested that the hypothesized model fit the data well ($\chi2$ = 830.875, df = 455, p = 0.000, CMIN/df = 1.826 (between 1 and 3) (Kettinger & Lee, 2005), CFI = 0.949 > 0.9, SRMR = 0.039 < 0.08, RMSEA = 0.047 < 0.06, PClose = 0.817 > 0.05 (Hu & Bentler, 1999). The hypothesized model shows the relationship between two factors in the model including: Emotional Intelligence, students' group work result, self-managed teams and cross-functional teams.

Figure 2 shows the overall structure model with standardized path coefficients. Hypotheses H1, H2, and H3 are accepted. Emotional Intelligence has a positive relationship with group work results and self-managed teams (β = 0.048 and 0.061 respectively). Self-managed teams have a positive relationship with group work results (β = 0.035 respectively). Cross-functional teams have the opposite relationship with Emotional Intelligence and students' group work results (β = -0.063 and -0.034).
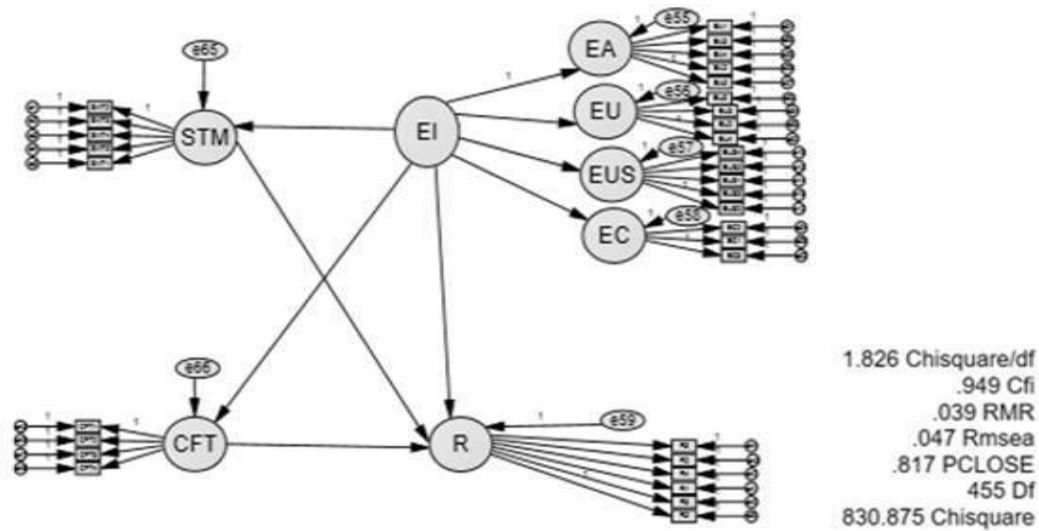
Figure 2: Structural Equation Model Analysis (SEM)

Thus, the models are considered suitable for SEM analysis. Meanwhile, with the data set collected from the survey, the research model is expected to be created from the fitting overview and theoretical supports, and the relationship among scales ensures statistical significance. SEM analysis of the linear structural model, we have the test results in Table 1.3.

Table 3: The result of the path analysis among variables with standardized regression weights

Relationships			Estimate	SE	CR	P-value	Results
SMT	<---	EI	0.660	0.061	10.806	***	*Supported*
CFT	**<---**	**EI**	**0.009**	**0.063**	**0.140**	**0.888**	***Rejected***
R	<---	SMT	0.391	0.035	11.057	***	*Supported*
R	**<---**	**CFT**	**0.009**	**0.034**	**0.273**	**0.785**	***Rejected***
R	<---	EI	0.297	0.048	6.217	***	*Supported*

The results of the mediation test with Process v3.5 by Andrew F. Hayes are shown in Table 3. Emotional Intelligence increased group work efficiency through the positive individual goal (β in positive effect = 0.048, $p < 0.05$), and the relationship between Emotional Intelligence and students' group work result was mediated by self-managed teams (β negative effect = 0.061, $p < 0.05$) so H3 (self-managed teams mediate the relationship between Emotional Intelligence and students' group work result of university students) was not rejected. The linkage between Emotional Intelligence and group work result was not mediated by cross-functional teams so H4 and H5 were rejected.

4. Discussion and Conclusion

Discussion

This study focuses on the aim of measuring the impact of the direct and indirect relationships between Emotional Intelligence and University students' group work results, in which the mediating determinants in the indirect relationship were studied, practicing two factors of self-managed teams and cross-functional teams. However, the hypothesis relating to mediating variables cross-functional teams are not endorsed for $p > 0.01$.

❖ *Firstly*, Emotional Intelligence is positively related to students' group work results. This conclusion is acknowledged in Bar-On (1997); Goleman (1998); Mayer & Salovey (1997). In particular, Gujral & Ahuja (2011) confirmed that Emotional Intelligence is the key factor in cooperation and collaboration among team members upon accomplishing a common objective. The ability to use social intelligence, process personal emotional information and other relationships will help students adapt and handle the fluctuations of the work or study environment. When students have the ability to process emotional information, recognize, use, understand and control emotions well, students can learn a lot from their friendships and listen from lecturers more effectively, knowledge and skills both professional and social are improved, helping students develop the qualifications and quality of work that are useful for themselves in the future. Therefore, to facilitate the progression toward success, it is crucial to motivate each team member's Emotional Intelligence.

❖ *Secondly*, Emotional Intelligence positively affects self-managed teams. This result is consistent with some previous studies of Gujral & Ahuja (2011). Self-managed teams had their common goals, key objectives, and the alignment between team's goals with the organization's goals set so that each team member shall discover, be aware of, and take control of not only their emotions but also other members to reduce internal conflict, increase trust and knowledge-sharing ability in a team. The greater the EI control is, the more students can achieve excellent results.

❖ *Thirdly*, self-managed teams have a positive relationship with student group work results. This assertion is recognized in several studies such as Cohen & Ledford Jr (1994); Goodman & Kruger (1988); Kirkman & Rosen (1999). Suggestive evidence shows that self-managed teams operate effectively and provide high productivity, which enhances the group work results. In order to function effectively, a team needs to maintain a relationship between self-efficacy and team efficiency. In addition, team leaders should delegate the work fairly, making a table that is prudent for the capacity and ability of each team member.

❖ *Finally*, this study confirms the mediating effect of self-managed teams on the relationship between Emotional Intelligence and student group work result. The above result is aligned with the preceding study which found that the belief of mediating effect of self-managed teams (Gujral & Ahuja, 2011; Kirkman & Rosen, 1999). However, this study does

not confirm the mediating relationship between cross-functional team's variables and Emotional Intelligence affecting students' group work results.

Practical implications

The ultimate goal of the research is through the relationship between the scales in the research model to make recommendations to enhance the group work results of university students. For university students, the authors give some suggestions to enhance students' group work results as follows:

❖ *Firstly,* the student needs to be aware that the development of Emotional Intelligence plays a significant role through interactions with others. In addition to actively studying, reading many books and references, students need to actively take part in collective activities, build collective emotional relationships. Through experience, students need to know and understand their feelings and know how to use and control emotions appropriately.

❖ *Secondly,* students should form teams in the form of self-managed teams in which team members have full authority to decide on tasks such as assigning tasks, methods of doing work and, scheduling activities. This will help increase the team performance of university students.

❖ *Thirdly,* team leaders and team members need to create an open and comfortable working environment based on trust, consolidate common goals and responsibility toward just and information publicity relating to students' group work. Team leaders must exchange with team members by meeting in person directly or indirectly through mobiles, applications assisting contacting to receive recommendations, replies from team members immediately.

❖ *Fourthly,* team members must follow the interpretations from other members. Supposing an individual in the group does not feel they are not respected or neglected, they shall not put their trust in the team and the group work.

❖ *Finally,* students can apply the Kaizen technique in group work. Team leaders encourage team members to give innovative ideas and recommendations, then together with team members evaluate and select the effectiveness of the given ideas and recommendations to apply to the work. Kaizen technique is successfully applied to team leaders and team members who have creativity and excellent knowledge suitable for students' group work. This technique motivates the spirit of the group, eliminating the team members' dependence on the team leader.

For managers and lecturers at universities, the authors give some suggestions to enhance students' group work results as follows:

❖ *Firstly,* building collective activities in universities, classes, teams to create a dynamic and inclusive environment for students to participate in group work activities. Such group work activities will help students gain more confidence when expressing themselves in front of the team, having greater responsibility for themselves and their team.

❖ *Secondly*, encouraging students' creativity, motivating students with personal achievement from subjects in the university or college is a way for each student to think about their individual goals and find out the fastest, most effective way to accomplish their goals.

❖ *Finally*, organizing short courses or seminars to share personal emotional management and control skills, skills in shaping individual goals, and building common goals for each group work.

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