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## A Study of Relationship of Factors in Tuckman Model

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### Abstract

Education system plays a major role in providing knowledge, skill, and opportunity that enable people to become successful and develop their potential to the fullest. At all levels, group work is used as a means for learning. In higher education, group work is frequently used as a pedagogical mode in the classroom as well as equivalent to any other pedagogical practice. The purpose of this study is to explore perception of learners on their use of learning strategies based on four stages of Tuckman's Model including performing stage, forming stage, storming stage and norming stage. This research is a quantitative descriptive study using survey methods conducted online and the sample was obtained from public universities in Malaysia. The instrument of survey was divided into 4 main sections. Based on the survey conducted towards 212 Malaysian higher education students with regard to their experience in group work learning, it was found that there is a medium and high level in all stages in group work especially in the performing stage. The findings on the relationship showed that there was a positive relationship between performing and the three stages in group work. Thus it clearly shows that the learners are satisfied with the stages in their group work and their performance is influenced by the forming, storming and norming stage. The educator should emphasize the pedagogical, teaching and learning with group work activities.

**Keywords:** Group Work, Learners, Tuckman Model

### Introduction

#### Background of Study

The complexity of our world today is increasing due to a lot of changes. These challenges and changes have significantly affected the ways in which groups come together and operate. Therefore, a use of a specific model can play a major role in the organization of such tasks. One of the most influential and well recognized was the Tuckman's Model. Most popular was

the (Tuckman, 1965; Tuckman and Jensen, 1977). The focus of the model is on group development where it was used as a mean describing and studying group, collaborative efforts among group members, group work as well as on group dynamic and teams. All of these were established essentially through the four stages of forming, storming, norming, and performing where the fifth was added as a result of research development in the field (Bonebright, 2010). According to Tuckman (1965) also, all of these stages are inevitable and necessary for a team to face up challenges, to grow, plan work, tackle problems, find solutions as well as deliver the result.

One of the most widely used and deeply researched teaching approaches in the college classroom is group work. Many researchers have suggested various definitions of group work and collaborative work. Cullingford (1995: 83) has defined group work as "...One means of allowing orally to develop and creating conditions in which some central ideas are tackled...". Besides, Slavin, (1986, as cited in Dunkin ed. 1987: 238) defined "Group work is a division of the class into learning groups of four to six members who are of all levels of ability. These groups also have a mix of boys and girls and students of different racial, ethnic backgrounds in about some proportion, they represent in the class as a whole." On the other side, in Beard's (1978, as cited in Dunkin, ed., 1987: 288) opinion, "Group work is a discussion of academic work that affords students the opportunity to organise their thinking by comparing ideas and interpretation with each other and to give expression and hence form to their understanding of a subject." According to Forsyth (2010) group work is also defined as two or more students working together in an educational setting in order to develop knowledge and abilities.

Groups will not always work well together. Students and instructors experience a number of common problems when involved in group work. Some of them include uneven workload, social conflict and lack of cohesion (Gillies, 2013). Malaysian perspectives also found that there are lots of problems in group work. The difficulty in discerning the individual's contribution within the group's process during group work is one of the challenge in group work assessment (Dijkstra et al., 2016; Forsell et al., 2020; Van Aalst, 2013),

### **Statement of Problem**

The study on teamwork among students is very significant in pedagogy. As part of the teaching and learning approach in education, teamwork serves numerous skills for students. From the perspective of employers, teamwork is becoming more prominent nowadays. Various studies from scholars such as Nudelman et al (2022); Casper (2017); Bets & Healy (2015) have proven that teamwork will prepare the students for their career readiness before they can penetrate in the job market. Other than that, the employer believed the effective teamwork can create a sustainable competitive advantage in the marketplace (Casper, 2017). The survey done by PayScale in 2016 also showed that 36% higher learning institutions graduates have less than desired teamwork skills. The major concern based on the survey was on the preparedness of the graduates to enter the workplace which are conflicting results from both the employers and the graduates. 87% graduates believe they are well prepared but only 50% of employers do. This remained consistent with the findings of the 2023 NACE survey which involved 246 employers including large corporations such as Chevron, IBM and Seagate which is to rate the most important skills desired by the employers. Apparently, the teamwork skills have shown the second top desired competency they look for a candidate

2023. Thus it is very significant for higher education to provide quality soft skills for the tertiary students to equip them with various skills such as problem solving, teamwork, work ethics, quantitative skills and many more.

Teamwork and group work are frequently used interchangeably. It entails the interaction of group members in carrying out tasks or making decisions in order to accomplish a particular task or group aim. Trust is a key issue here, not just between industrial workers but also between students in higher education. This will be involved in all stages of group process, including performing, forming, storming, and norming, as defined by (Tuckman, 1948). The importance of trust in group work has been demonstrated by a study by Xusen Cheng, Shixuan Fu, and de Vreede (2022) on vendors and clients during offshore software development outsourcing. In addition, Lencioni (2005) claimed that verbal and written communication is crucial in determining the success of group work. It involves a process such as, trusting other team members; dealing effectively with conflict; making commitments to each other; and measuring and understanding team development; be accountable to each other and focus on desired results rather than themselves. Thus, this study is significant in exploring the perception of learners on their use of learning strategies for effective group work.

#### *Objective of the Study and Research Questions*

This study is done to explore perception of learners on their use of learning strategies. Specifically, this study is done to answer the following questions;

- How do learners perceive the performing stage?
- How do learners perceive the forming stage ?
- How do learners perceive the storming stage?
- How do learners perceive the norming stage?
- Is there a relationship between performing stage and all the stages in group work?

#### **Literature Review**

##### Disadvantages of Group Work

La Beouf et al (2016) in their study mentioned that many students had a different view stating that group work grades were given to all students regardless of individual contributions and most students would not take a course specifically to gain experience in working in a group. A study by Roskosa and Rupniece (2016) found that the disadvantages of group work that are mentioned most often are the inability of students to plan their time and consider other students' opinions. Not only that, improper division of duties within the group as there are duties that can be fulfilled easier and faster. Also, the students lack the initiative and motivation to be actively involved in the working process (Roskosa & Rupniece, 2016).

The study findings regarding the drawbacks of using group work in translator training also revealed that it is hard to concentrate if the members of the group are talking and discussing. In fact, not always the contribution and performance of every group member are equal. Some students are not active. Some students are too active and do not consider the point of view of their group mates. Some of them can be influenced by your group mates and lose your ideas, and originality and make mistakes. The level of knowledge and competence could be different. Not always your colleagues are right (Roskosa & Rupniece, 2016). Besides, the largest number of students commented that all students did not contribute equally when working on group projects but seemed to get the same grade (La Beouf et al., 2016).

### *Advantages of Group Work*

Cohen (2011) described another teaching method that she utilized in the classroom. She uses task groups to teach group work concepts to MSW students in her group work courses. She concludes that 'in view of the current crisis in group work education it is particularly important for students who are lacking group work experiences in the field to have the opportunity to experience the dynamics of group work . Although she stated that the assignment is effective in demonstrating the concepts of group norms and roles as well as group development, one limitation of this method is that it did not teach group work skills. However, researcher D. Prets has an opinion that, working in a group, students are more positive and friendly towards each other in comparison with those students who practice individual work and competing methods of studying (Prets, 2000). Olga Molina and George A Jacinto (2015) studied the advantages and benefits of a student mutual-aid group in developing group work skills. There is a growing consensus in the literature that there is a crisis in group work education due to the limited internships that offer students the opportunity to practise with groups. In response to this crisis, the authors developed a model for teaching groupwork skills in the classroom using mutual-aid groups. This paper presents a study (n= 192) of social work graduate students who participated in the mutual-aid groups. The findings demonstrate that the majority of the students (90%) rated the mutual-aid groups as an excellent to good method of teaching group work skills and group dynamics.

### *Past Studies on Disadvantages of Group Work*

Many Studies have been done to investigate the advantages of group work. Working in a group can be an extremely effective approach to completing tasks in the classroom, but it has its drawbacks as well. Roskosa and Rupniece (2016) reported that the disadvantages of group work that are mentioned most often are the incapability of group members on time management. In detail, students have a plan on timing and also willingness to accept other students' opinions. Furthermore, group work won't work well when all its members do it in common, valuing each and every opinion and with no intention of always being right. Perhaps, poor leadership or self-centeredness does not allow members to listen to others or stop imposing their criteria. In these cases, when someone is not able to work in a team, conflict arises and then it is difficult for the group to produce and work well (Shen & Chen, 2023). There have been many past studies on group work. The study by Giller (2013) is done to investigate group work from perspectives of uneven workload, social conflict and lack of cohesion. This research accommodates an overview of five various studies that researchers have conducted that displayed the importance of explicitly structuring cooperative small-group work in classrooms if students are to acquire the benefits widely attributed to this pedagogical practice. In this regard, this study found five key elements, namely, interdependence, individual accountability, promotive interaction, and training in the social skills vital to facilitate group interaction. Next, the study by Hasan (2023) on group work assessment at Global College of Engineering and Technology. The aim of this study is to successfully implement peer assessment based on individual contribution and lessons learned from the peer assessment. The study found that establishing the roles and responsibility of group members is useful for guiding their own discussions about roles instead of imposing on them. Scheduling group meetings as students find it difficult the time and workload pressure and, in many cases, resulting anxiety, of organizing oneself to attend and contribute to group meetings is keenly felt by many students in Global College of Engineering and Technology.

### *Past Studies on Advantages of Group Work*

Numerous studies have been conducted to investigate the advantages of group work. The research focuses on the benefits of group work, including (i) factors that contribute to effective teamwork and (ii) the steps or interventions that may be taken to enhance procedures and foster more effective teamwork. Regarding the factors that contribute to effective work teams, the study of Wegner et al (1985) concluded that this good teamwork reflects a form of shared understanding across the knowledge and expertise of group members. Strengths in terms of knowledge and understanding bring stronger teamwork. To add, a study by Liang et al (1995) argues that group members will know "who knows what" and thus enable accessing and directing appropriate and relevant knowledge through group work. On the other hand, the study of Hall et al (2012b); Salazar et al (2012) saw the opposite. Larger teams or groups with a high diversity of membership that cross disciplinary or university boundaries can make it difficult for a team to work. Diversity here is no longer seen as a strength but as divisiveness.

Another area of study on the benefits of group work revolves around actions or interventions to improve teamwork. The study of Klimoski & Jones (1995) is of the view that team composition results from bringing together a combination of team members based on different expertise, knowledge, and skills needed to achieve team goals and tasks. A different perspective was taken on the presence of subgroups in a study by (Hall et al., 2012b). Whenever the subgroup that appears is different from the other subgroups, a less pleasant atmosphere will occur. This atmosphere of differences and incompatibility ultimately prevents a better and smoother teamwork process.

### **Conceptual Framework**

Figure 1 shows the conceptual framework of the study. Group work is a common activity; be it face-to-face or traditional. According to Rahmat (2020), group collaboration allows team members to learn from one another. In addition to that conflicts in the group work improves critical thinking and problem solving skills of the team members. According to Tuckman (1965), there are 4 stages in the group work and they are the forming stage where the team members begin discussing the work. The next stage is the storming stage where conflicts occur. Team members begin to disagree or try to prove their point. The third stage is the norming stage where team members are busy completing the project. The last stage is the performing stage where team members submit the project or declare that the project is completed. In the context of this study, the researchers explore the relationship between the last stage-performing stage with the other stages.

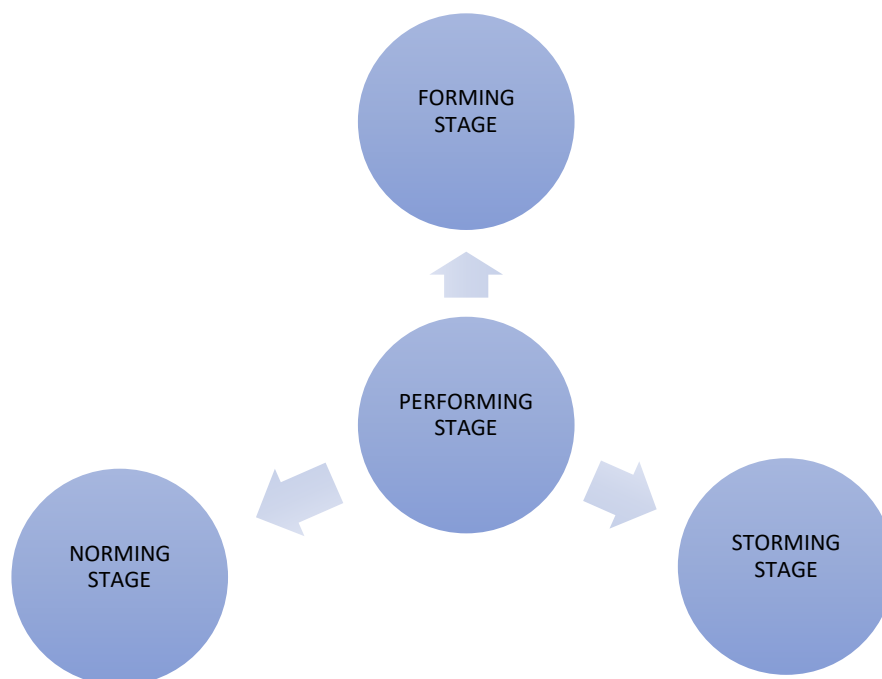


Figure 1- Conceptual Framework of the Study- Is there a relationship between Performing Stage with Forming Stage, Forming Stage and Norming Stage

### Methodology

This quantitative study is done to explore motivation factors for learning among undergraduates. A purposive sample of 212 participants responded to the survey. The instrument used is a 5 Likert-scale survey and is rooted from Tuckman (1965) on group work to reveal the variables in table 1 below. The survey has 4 sections. Section A has items on demographic profile. Section B has 7 items on forming. Section C has 6 items on storming. Section D has 8 items on norming and section E has 8 items on performing.

Table 1

#### *Distribution of Items in the Survey*

SECTION	STAGE	Items
B	FORMING	7
C	STORMING	6
D	NORMING	8
E	PERFORMING	8
		29

Table 2

#### *Reliability of Survey*

### Reliability Statistics

Cronbach's Alpha	N of Items
.897	29

Table 2 shows the reliability of the survey. The analysis shows a Cronbach alpha of .897, thus, revealing a good reliability of the instrument chosen/used. Further analysis using SPSS is done to present findings to answer the research questions for this study.

### Findings

#### Findings for Demographic Profile

##### Q1 Gender

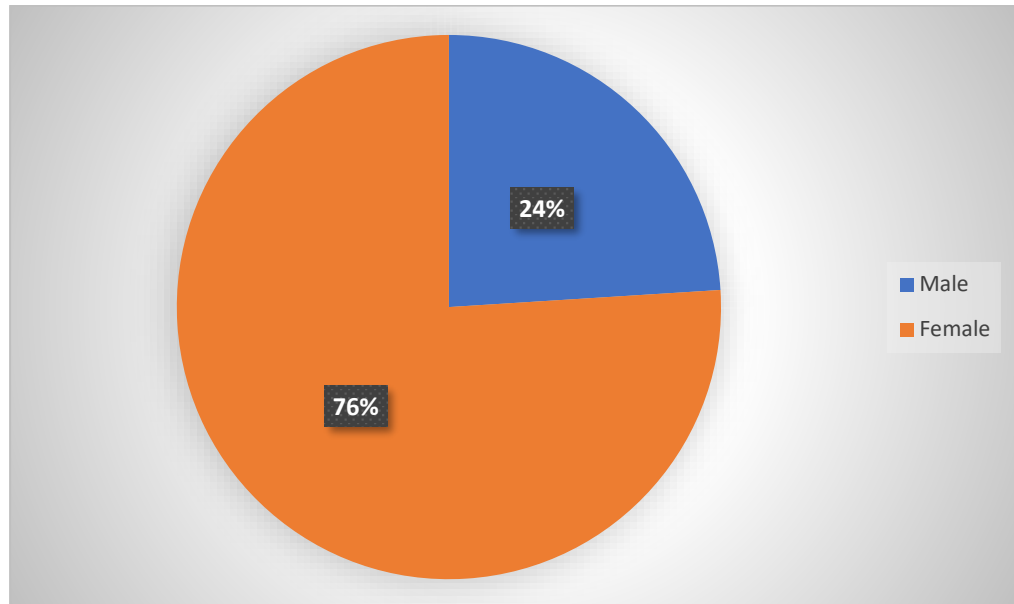


Figure 2- Percentage for Gender

As shown in figure 2, the respondents of this survey consisted of 7% female and 19% male. Thus the majority of the respondents are represented by female students.

##### Q2 Discipline

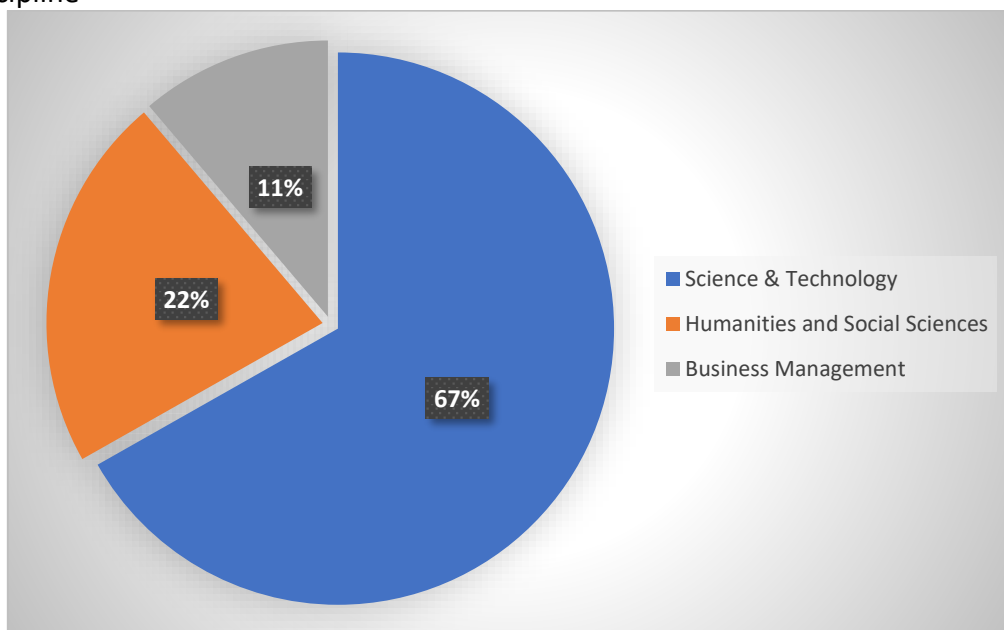


Figure 3- Percentage for Discipline



This study involved three (3) major disciplines in gauging the experience of respondents in their group work. According to the figure 3 above, 55% are from humanities and social sciences, 28% are from business management field whilst only 17% from science and technologies. Apparently, the majority of respondents comes from humanities and social sciences discipline.

#### Q3 Level of Study

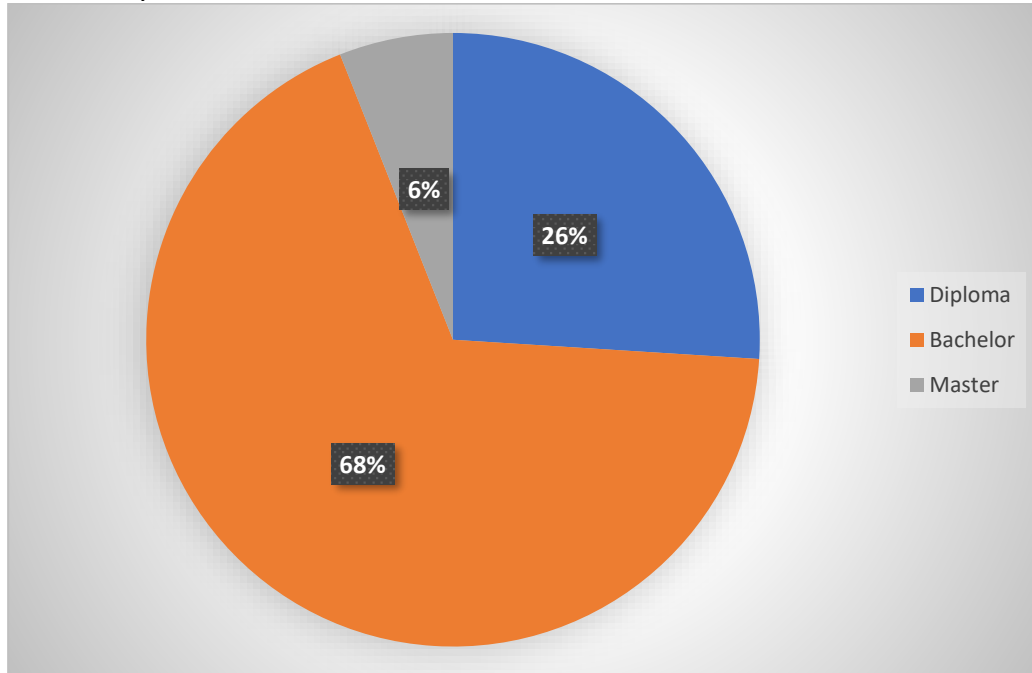


Figure 4- Percentage for Level of Study

Figure 4 indicates that most of respondents are from bachelor degree level with 68%, followed by 26% from Diploma level and the least are from Master degree level with only 6%. It means that, the respondents are mostly represented by the undergraduate level compared to post-graduate.

#### Q4 Mode of Study

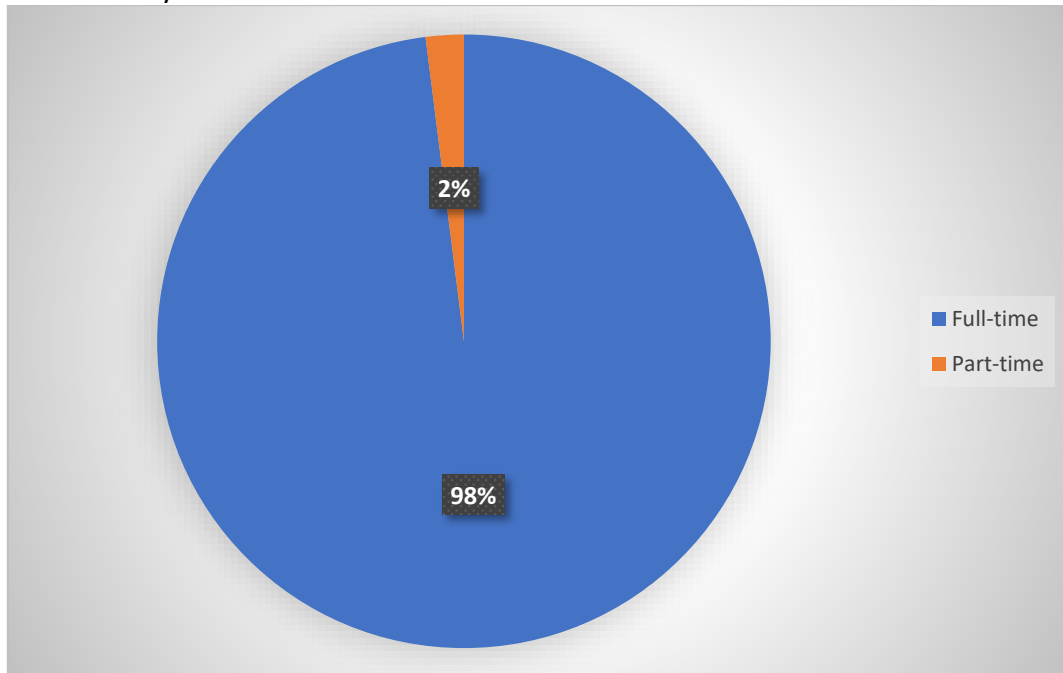


Figure 5- Percentage for Mode of Study

Teamwork activities involved in both mode of studies which are full-time and part-time. In this study, the majority of the respondents are full-time students which carries 98% value, whilst only 2% respondents from the part-time mode of studies.

### Findings for Performing Stage

This section presents data to answer research question 1-How do learners perceive the performing stage?

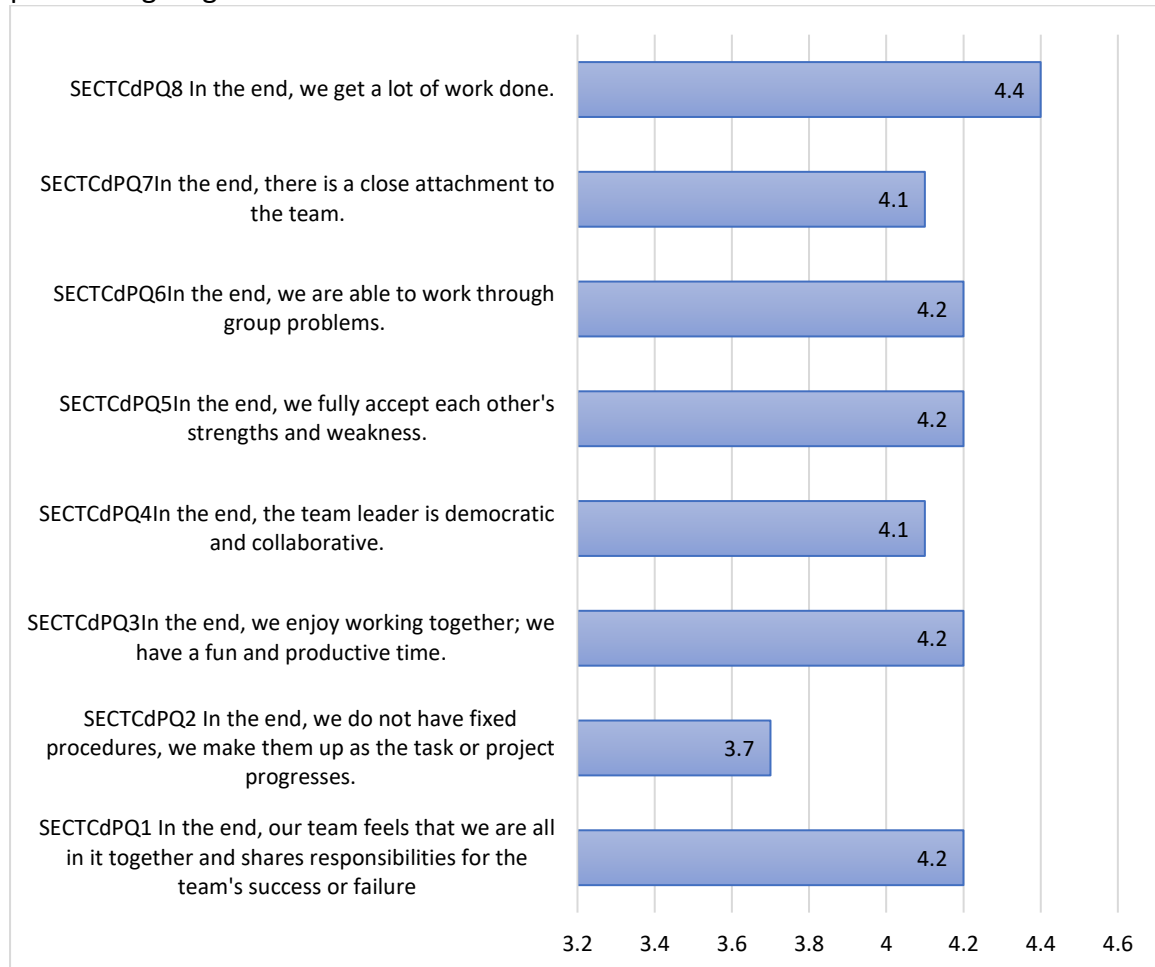


Figure 6: Mean for Performing Stage

Figure 6 shows the statistics for the mean value for the variable of performing stage. Based on the results of the mean value, the lowest mean value reported was for SECTCdPQ2 while the other mean values revealed an average value of 4 and above. This means that the level of the performing stage is high.

*Findings for Forming Stage*

This section presents data to answer research question 2- How do learners perceive the forming stage ?

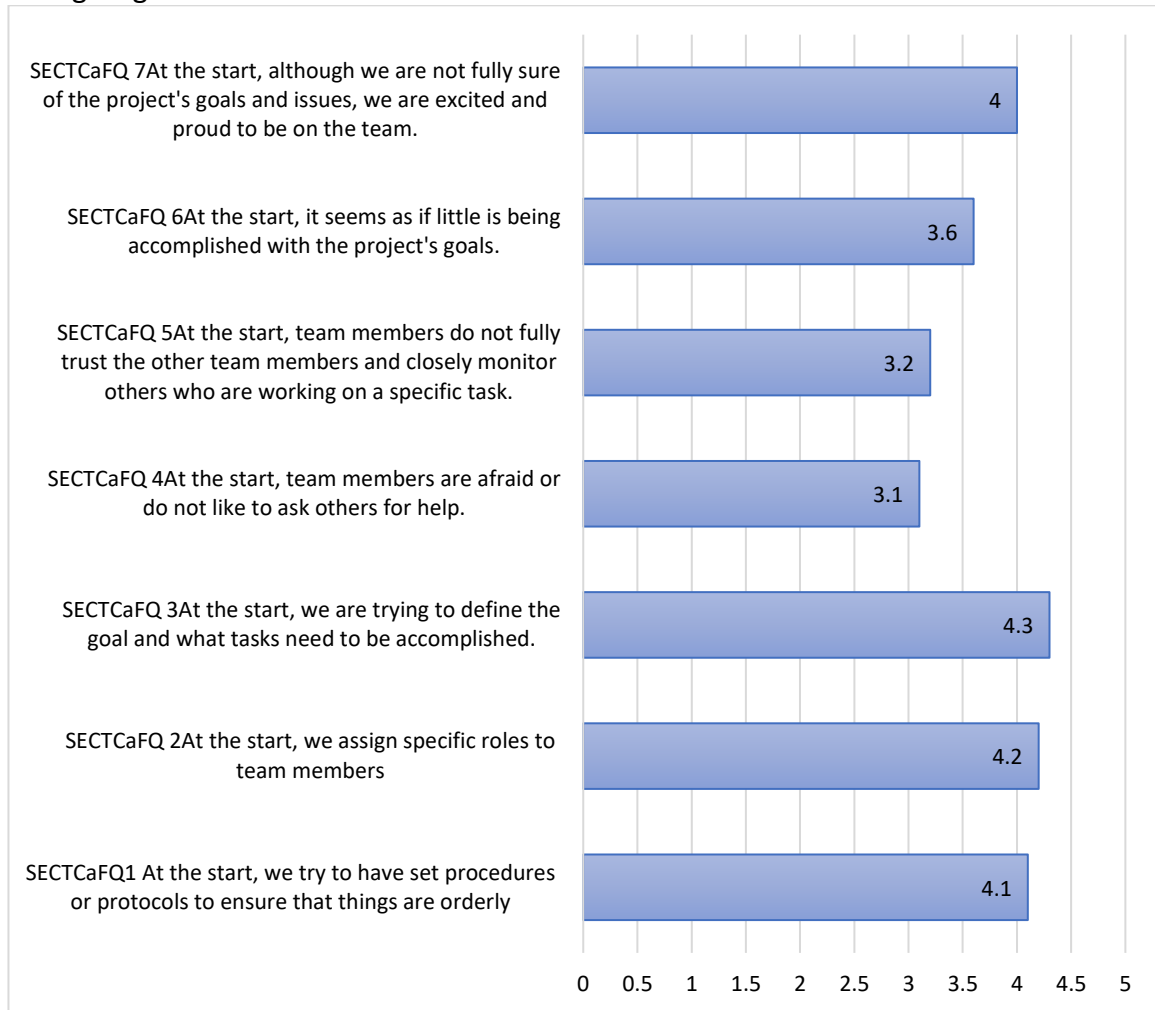


Figure 7: Mean for Forming Stage

Figure 7 indicates the statistics for the mean value for how learners perceive the forming stage. As shown in Figure 7, the results show that the lowest mean values for how learners perceive were FQ4, FQ5, and FQ6. Meanwhile the highest mean values were FQ3, FQ2, FQ1 and FQ7. Based on the findings, this means that the level of learners perceiving the forming stage is between medium and high.

### Findings for Storming Stage

This section presents data to answer research question 3- How do learners perceive the storming stage?

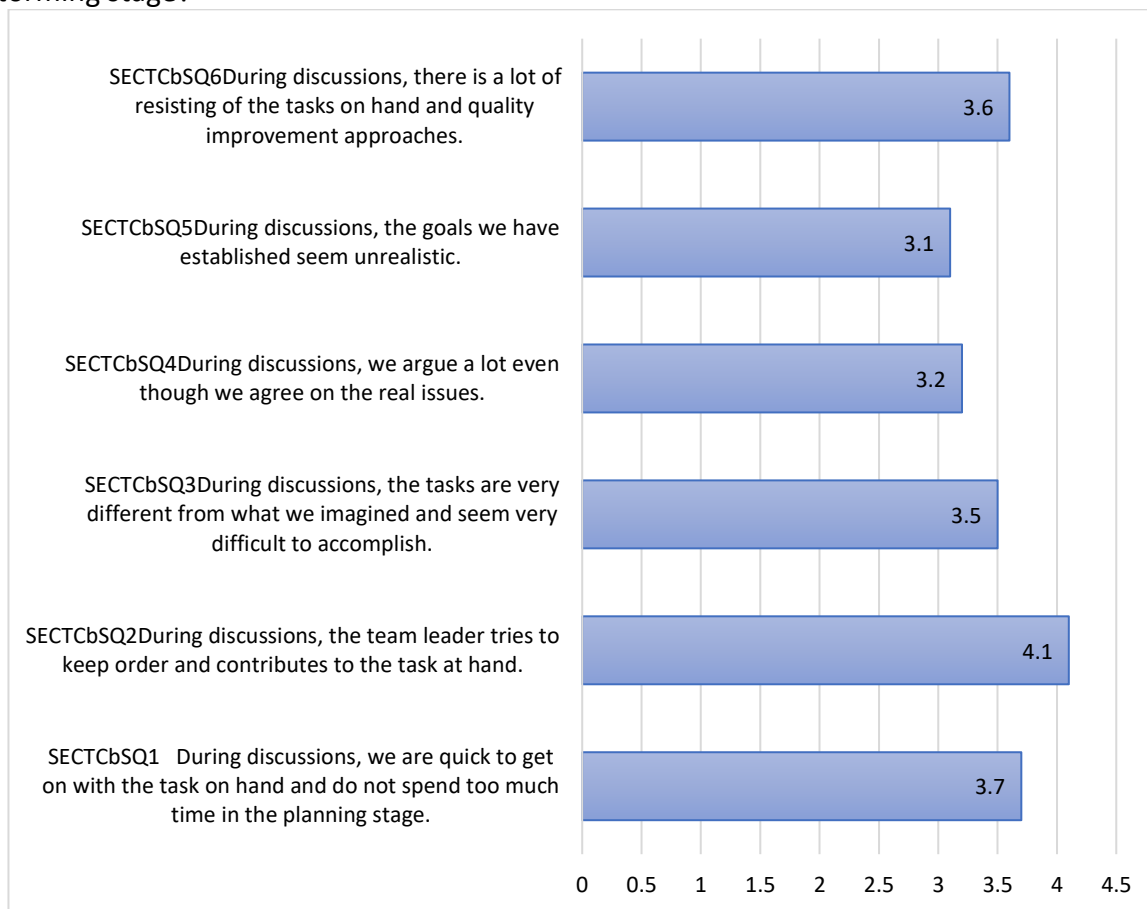


Figure 8: Mean for Storming Stage

Figure 8 demonstrates the statistics for the mean value for how do learners perceive the storming stage. As shown in Figure 8, the results show that the lowest mean values for how learners perceive the storming stage were SQ5 followed by SQ4 and SQ3. Meanwhile the highest mean values were SQ2 and SQ1. Based on the findings, the mean value is that fall between medium and high level learners perceiving the storming stage is 3.5-3.6.

*Findings for Norming Stage*

This section presents data to answer research question 4- How do learners perceive the norming stage?

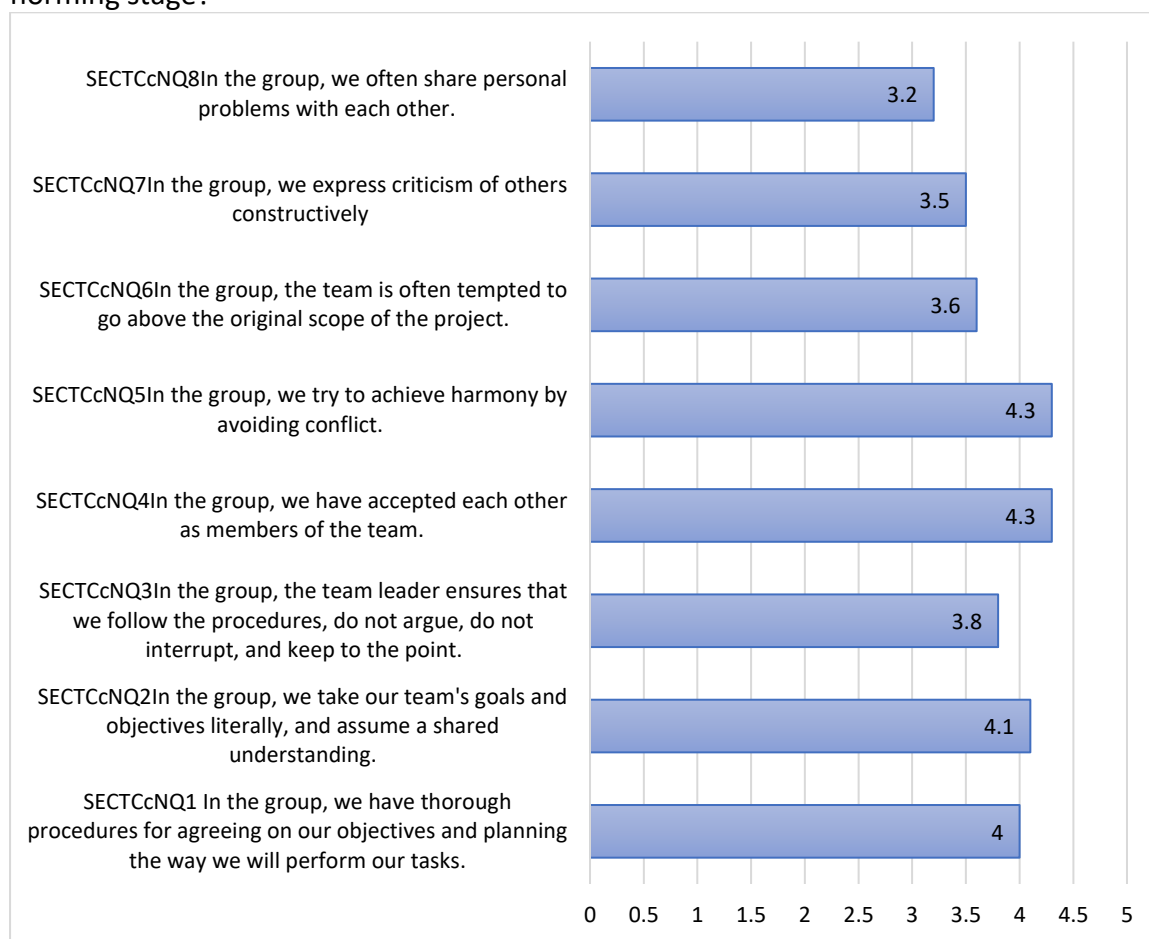


Figure 9: Mean for Norming Stage

Figure 9 displays the statistics for the mean values for the independent variable, namely, norming state. From the results of the mean value above, the lowest mean values for the independent variables were found to be NQ3, NQ6, NQ7 and NQ8. Meanwhile, the highest mean values were found to be NQ1, NQ2, NQ4 and NQ 5. This means that the level of students perceive the level of norms is between medium and high.

*Findings for Relationship between Performing and all the stages in group work.*

This section presents data to answer research question 4- Is there a relationship between performing stage and all the stages in group work. To determine if there is a significant association in the mean scores between performing stage and all the stages in group work, data is analysed using SPSS for correlations. Results are presented separately in table 3, 4, and 5 below.

Table 3

*Correlation between performing and Forming***Correlations**

		TOTALPERFORMING	TOTALFORMING
TOTALPERFORMING	Pearson Correlation	1	.443**
	Sig. (2-tailed)		.000
	N	212	212
TOTALFORMING	Pearson Correlation	.443**	1
	Sig. (2-tailed)	.000	
	N	212	212

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows there is an association between performing and forming stage. Correlation analysis shows that there is a moderate significant association between performing and forming stage ( $r=.443^{**}$ ) and ( $p=.000$ ). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a moderate positive relationship between performing and forming stage.

Table 4

*Correlation between performing and storming***Correlations**

		TOTALPERFORMING	TOTALSTORMING
TOTALPERFORMING	Pearson Correlation	1	.237**
	Sig. (2-tailed)		.000
	N	212	212
TOTALSTORMING	Pearson Correlation	.237**	1
	Sig. (2-tailed)	.000	
	N	212	212

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Table 4 shows there is an association between performing and storming stage. Correlation analysis shows that there is a low significant association between performing and storming stage ( $r=.237^{**}$ ) and ( $p=.000$ ). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and weak positive correlation from 0.5 to 1.0. This means that there is also a moderate positive relationship between performing and storming stage.

Table 5  
 Correlation between performing and Norming

**Correlations**

		TOTALPERFORMING	TOTALNORMING
TOTALPERFORMING	Pearson Correlation	1	.596**
	Sig. (2-tailed)		.000
	N	212	212
TOTALNORMING	Pearson Correlation	.596**	1
	Sig. (2-tailed)	.000	
	N	212	212

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 5 shows there is an association between performing and norming stage. Correlation analysis shows that there is a high significant association between performing and norming stage ( $r=.596^{**}$ ) and ( $p=.000$ ). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and weak positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between performing and norming stage.

**Conclusion**

*Summary of Findings and Discussions*

Based on the current study, it can be summarised that different results were found towards these five sections. In the performing stages, it revealed that the learners showed a positive perception of it. This means that the level of the performing stage is high with the mean range value from 3.7 to 4.4. In terms of forming stage, the result reported that there is fluctuation in answering the quotation in which based on the findings, the level of learners perceiving the forming and norming stage is between medium and high with mean value between 3.1 to 4.3. Apart from that, the finding for storming stages is considerably medium with average above 3.00 and the highest is only 4.1. The inferential statistical results show there is a positive relationship between performing with all stages in group work. This is congruent with the study from Betts & Healy (2015); Kamaludin et.al (2022) where they stated that the stages of group work helped students to perform better in learning activities.

It was discovered that there is a medium and high level in all stages of group work, notably in the performing stage, based on a survey given to 212 Malaysian higher education students regarding their experience in group work learning. According to the research, there is a good correlation between performing and the three phases of group work. Thus, it is evident that the learners are happy with each stage of their group work and that the forming, storming, and norming stages have an impact on their performance which can be measured through the performing stage.



*(Pedagogical) Implications and Suggestions for Future Research*

Based on the findings, it is proven that the learners have learned a lot from all stages in group work. They are satisfied with the process they have gone through in forming, storming and norming and there is a positive relationship with their performing stage. The educator should place a strong emphasis on group work activities that combine teaching and learning. Further research should be carried out to gauge the information from deep understanding which can be done through qualitative approach or mixed method. The observation and survey from the teacher or instructor perspective also could be useful to get a 360 degrees result on the effectiveness of group work in pedagogical, teaching and learning.

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