
南方科技大学
SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

# Survey on Group Collaboration Among Students in SUSTech

11812532 Yiling Luo 11812136 Xinyue Qi

11811634 Kexin Ye 11812232 Xinran Tao

11812432 Xin Fan 11610129 Ziwen Li

**Abstract**

In this paper, a sample of 138 SUSTech students are selected as the object of investigation. The survey covers the current situation of attitudes and views, participation, efficiency and the impact towards group cooperation along with the existing problems. The result shows that the ideal group size is three and the grading methods differ significantly between expectation and reality. The efficiency of group collaboration is quite well but the problem of unpunctuality is widespread among students. Also, group collaboration has certain influence on schedule. Social skills and presentation skills are the two main aspects of development. Furthermore, some relevant strategies and suggestions are also proposed.

**Keywords: SUSTech student, group collaboration, sample survey, efficiency, group structure**

## 1 Introduction

Recent years, group cooperation and group discussion are more common in the university. Group cooperation ability, leadership and presentation skills are necessary for university students. In order to study the preferences of college students about group discussion, we carry out a survey on college students' attitudes and opinions towards group cooperation, the participation and efficiency of group cooperation.

## 2 Research Objectives

There are three objectives to investigate. The first one is to find out the attitudes and views towards group collaboration of SUSTech students. The second one is to investigate the participation and efficiency of group collaboration of SUSTech students. The last one is to explore the impact of group collaboration of SUSTech students.

## 3 Sampling Scheme

In our research, we carry out simple random sampling among undergraduate students in SUSTech. Every sampling unit has a known and equal chance of being selected and is independent. Group cooperation is a widespread way for assessment in courses and freshmen also have many chances to do it in the first year of study. There is no great difference of behavior among four grades, so this sampling method is reasonable. We design the questionnaires, hand them out and collect the data through *Wenjuanxing*.

## 4 Survey Object

The target population of this survey are mainly undergraduates of SUSTech. Our group receive a total of 138 valid questionnaires, of which 89 are males and 49 are

females. The majority are junior undergraduates (44.20%). The majors of the survey participants cover a wide range, with 24 majors in total.

# 5 Survey Results and Analysis

## 5.1 Basic Information of Group Collaboration

In this part, we investigate the basic information of the group structure.

First, we ask participants what types of courses they have taken include group discussion. The result shows that a large number of students (84.78%) choose general courses, 76.09% of the students choose professional courses and 79.71% of them choose public elective courses.

Second, we investigate the number of courses with group collaboration in the last semester.

| Options | Frequency | % |
|---|---|---|
| None | 11 | 7.97% |
| 1 | 23 | 16.67% |
| 2 | 43 | 31.16% |
| ⩾3 | 61 | 44.20% |
| Total | 138 | 100.00% |

Table 1 Number of Courses with Group Collaboration in the Last Semester

The result shows that only a small number of students (7.97%) have no courses with group cooperation. The majority of students (44.20%) have three or more courses with group cooperation.

Last, we ask participants whether they have a team leader in their recent group collaboration and most students (60.87%) say they had a team leader.

## 5.2 Attitudes and Views towards Group Collaboration

In this part, we intend to find SUSTech students' attitudes and views towards group cooperation.

First of all, we ask participants 'Under what circumstances do you need group

cooperation?’

| Options | Frequency | % |
|---|---|---|
| Professionalism | 36 | 26.09% |
| Heavy Tasks | 80 | 57.97% |
| Time Shortage | 16 | 11.59% |
| Others | 6 | 4.35% |
| Total | 138 | 100.00% |

Table 2 Circumstances in Need of Group Cooperation

The result shows that, a large number of students (57.97%) think the group cooperation is most necessary if there is too much work. Other students regard professionalism (26.09%) and time shortage (11.59%) as the most necessary condition of group collaboration.

Then we are curious about the role preference in the group. Among the 138 respondents, we find that 105 of them prefer to be a group member while other 33 want to be a leader.

Then we ask further on the characteristics which the leaders should possess. Note that each respondent is required to choose at most two choices. Good communication skills, solid professional competence and strong sense of responsibility are given comparable importance by respondents.

We also focus on the most important quality that students want their group members to have.

| Options | Frequency | % |
|---|---|---|
| Ability | 36 | 26.09% |
| Enthusiasm | 99 | 71.74% |
| Other | 3 | 2.17% |
| Total | 138 | 100.00% |

Table 3 Quality of Ideal Group Members

From the result, we can see that 71.74% of the students we investigate prefer to find a person who has high enthusiasm rather than strong ability. We compare this with other factors, such as gender, role preference and major. However, it turns out that the

differences of all above are not significant, which means people's preference of the members' quality don't change much even they belong to different categories.

Group size is an indispensable question when we dive into suitable group structure.

| Options | Frequency | % |
|---|---|---|
| 2 | 19 | 13.77% |
| 3 | 106 | 76.81% |
| ⩾4 | 13 | 9.42% |
| Total | 138 | 100.00% |

Table 4 Expected Group Size

Through the significant difference in data, which collected for the question 'What is the optimal group size do you think could guarantee both participation and personal ability', we find that 76.81% of respondents vote for three-member groups, overtaking group of two (13.77%) and four (9.42%).

We also focus on the grading system among group members.

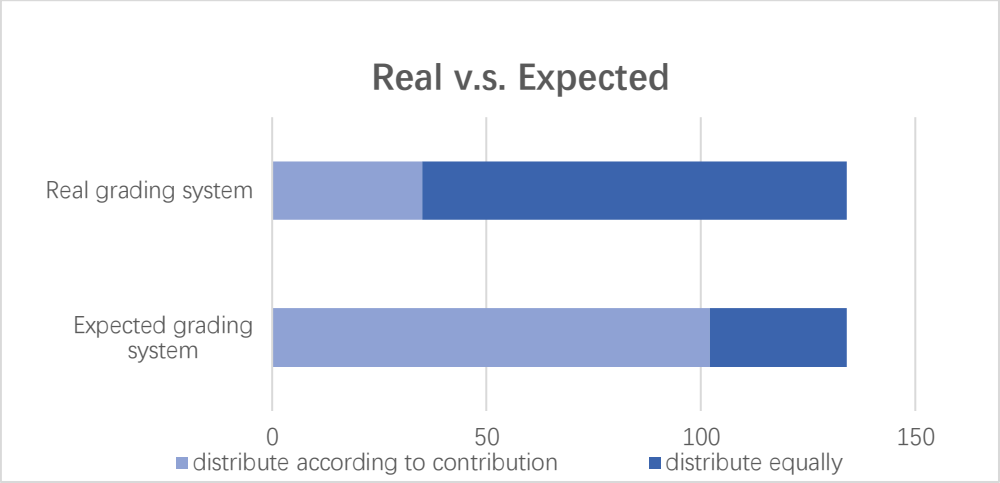


Figure 1 Real and Expected Grading System

According to the result, 105 out of 138 students prefer to distribute the score to group members according to their contribution and participation. On the other hand, only 36 out of 138 are graded according to their performance in the real collaboration process.

**5.3 Participation and Efficiency of Group Collaboration**

In this part, we aim to investigate the participation and efficiency of group

collaboration of SUSTech students.

First, we ask the punctuality of group meeting in the last group discussion.

| Options | Frequency | % |
|---|---|---|
| All group members participated on time | 32 | 23.19% |
| Some group members were rarely unpunctual (under 30%) | 89 | 64.49% |
| Some group members were often unpunctual (30%-60%) | 12 | 8.70% |
| Some group members were always unpunctual (over 60%) | 5 | 3.62% |
| Total | 138 | 100.00% |

Table 5 Punctuality of Participation in Group Discussion

According to the result, only 23.19% of the respondents say that all group members participate in discussion on time in the last group work. 64.49% of the respondents have experiences that some group members are rarely unpunctual. Some more serious situations exist: 8.70% respondents say there are group members who are often unpunctual, and 3.62% respondents say there are group members who are always unpunctual. It seems that the problem of unpunctuality is widespread among group collaboration.

Then we investigate whether the tasks were equally distributed in the last group cooperation.

| Options | Frequency | % |
|---|---|---|
| Yes | 76 | 55.07% |
| No | 62 | 44.93% |
| Total | 138 | 100.00% |

Table 6 Task Allocation in Group Work

In the last group collaboration, 55.07% of respondents say that group work is equally distributed while 44.93% choose unequal option.

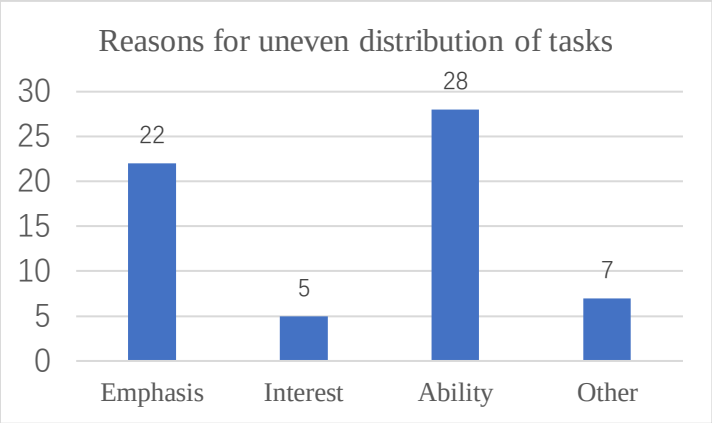


Figure 2 Reasons for Unequal Distribution of Tasks

For the 62 people who choose unequal, emphasis and ability are two major reasons contributing to unequal distribution of tasks.

After that, we try to find out the most time-consuming part in group discussion.

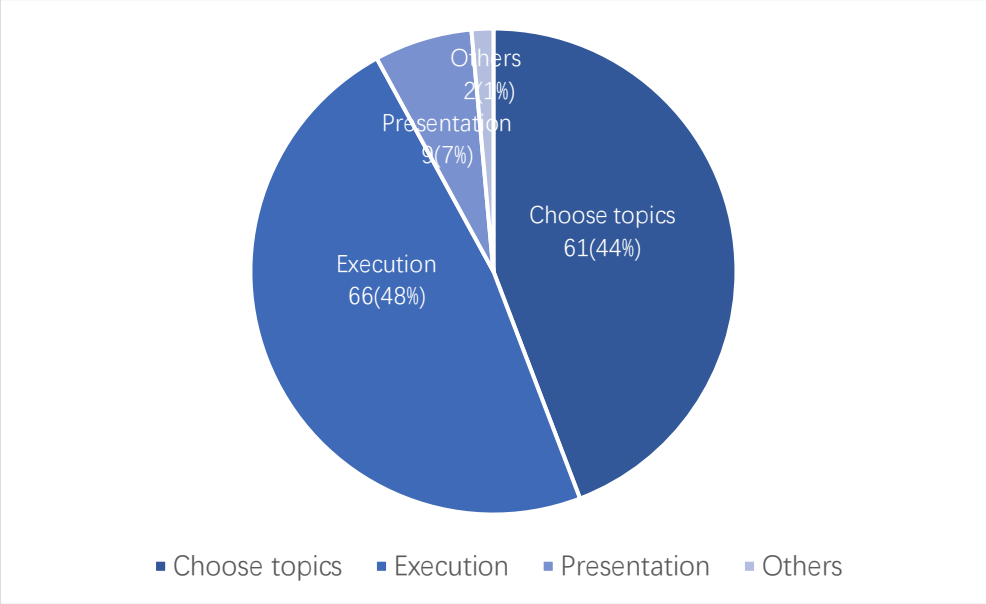


Figure 3. Most Time-Consuming Part in Group Discussion

It shows that execution and topic selection take much time and effort in group discussion.

Next, to test efficiency, we ask the respondents whether they would make a plan before performing the task in their last collaboration without requirements from the course. In case the definition of plan is not clear, we define it to be a time table that marks the

completion time of each separated task.

| Options | Frequency | % |
|---|---|---|
| Yes | 74 | 53.62% |
| No | 64 | 46.38% |
| Total | 138 | 100.00% |

Table 7 Whether They Made a Plan in Last Groupwork

| Options | Frequency | % |
|---|---|---|
| Stick to their plan | 23 | 31.08% |
| Fulfilled their plan most of the time | 48 | 64.86% |
| Hardly finished their plan | 3 | 4.05% |
| Total | 138 | 100.00% |

Table 8 Task Completion of Last Groupwork

According to the results, 74 out of 138 students make such a plan in their last groupwork and 71 of these students finished their plan quite well. Then we estimate the proportion of SUSTech students who made a plan in their last collaboration and the 95 percent confidence interval of the population proportion is [0.45, 0.62]. It shows that more than 40% of the students made a plan in their last group cooperation according to our estimation and most students fulfilled their plan quite well which reflects a relative high efficiency from this aspect.

After that, we investigate the priority of group tasks over individual tasks and find that there is no distinct trend of the priority according to the results.

Then we ask the finish time of recent teamwork before deadline and the usual finish time of individual homework.

| | On the day of ddl | 1-3 days before ddl | earlier |
|---|---|---|---|
| On the day of ddl | 8 | 17 | 1 |
| 1-3 days before ddl | 16 | 56 | 14 |
| earlier | 2 | 10 | 12 |

Table 9 Finish Time of Last Groupwork and Homework before Deadline

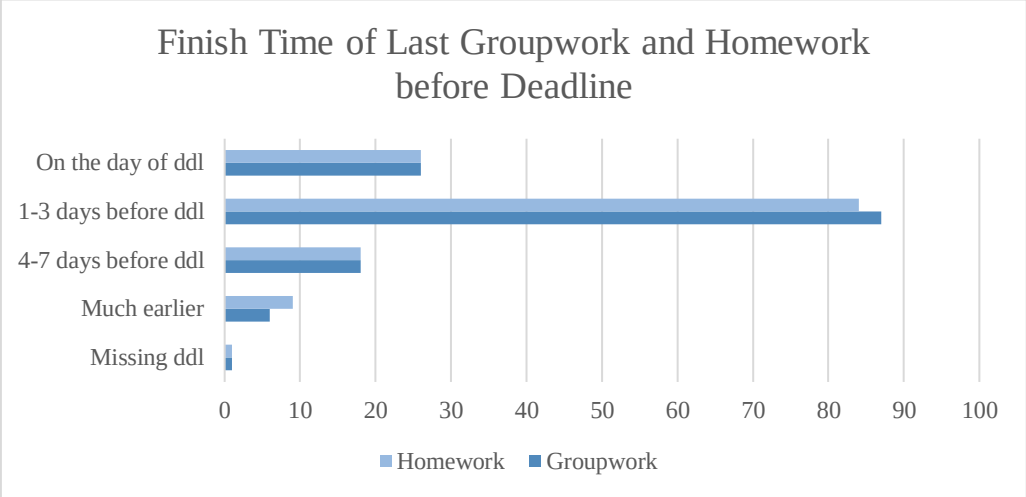


Figure 4 Finish Time of Last Groupwork and Homework before Deadline

From the histogram we may think the group collaboration has little impact on individuals and the choice doesn't vary much between group work and homework. However, the bar chart only displays the distribution of the finish time of individual homework and last groupwork and cannot reflect the number of respondents whose finish time are different between homework and groupwork. In fact, according to Table 9, we can learn that 23.19% of students who do their homework quicker than group work and the other 27.54% take the opposite action, which means the histogram gives us a misunderstanding of the finish time of individual homework and last groupwork.

### 5.4 Impact of Group Collaboration

In this part, we explore the impact of group collaboration of SUSTech Students.

First, we investigate the effect of group collaboration on schedule and we divide the extent of effect into four levels.

| Options | Frequency | % |
|---|---|---|
| Completely no effect | 27 | 19.57% |
| A little effect on schedule | 64 | 46.38% |
| Big effect on schedule | 35 | 25.36% |
| Severe effect on schedule | 12 | 8.70% |
| Total | 138 | 100.00% |

Table 10 Effect of Group Collaboration on Schedule

According to the result, 65.95% of the respondents claim no effect or a little effect of group collaboration on schedule and 34.06% respondents claim big or severe effect of group collaboration on schedule. We try associating grade with the level and find out that within freshmen, sophomore and juniors, the second level all has the largest proportion.

Next, we intend to find out which aspect the students think they have improved most due to group collaboration. Here are what students who choose 'others' thought they have improved: 'none', 'collaboration skills', 'emotion management skills', 'leadership', etc.

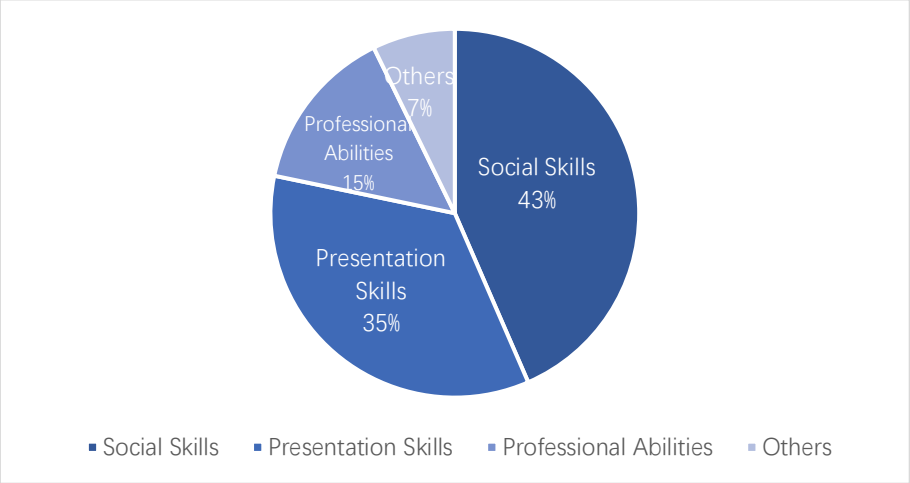


Figure 5 Aspects Improved Most in Group Collaboration

It shows that social skills and presentation skills, which account for 43% and 35% respectively, are the two main aspects of improvement.

# 6 Major Findings and Discussions

## 6.1 Findings Related to Grade Allocation

As some interviewers complain about the grade allocation in their teamwork in the focus group interview, we try to find if there is difference between the expected and real grading system. Figure 1 shows that less than 30% of students, in reality, have their grade distributed according to the contribution compare to 80% in their expectation. So,

from the result of Fisher test, we discover that the p-value is less than $2.2\times10^{-16}$, which shows a significant difference.

Then we want to analyze this phenomenon. We ask some students from different genders, majors and grades. As many students say they had faced a situation when their groupmates paid less attention to their teamwork, they prefer to choose the grade allocation according to contribution without considering other factors for the sake of fairness.

But in reality, there are many cases. For example, it's hard to define the complexity of different tasks, so the contribution is very hard to define. Also, many students turn to cooperate with their friends, so even some of the teammates contribute less to their work, it's embarrassing to point out. What's more, some students say they just want to make things simple or only want to pass the course. Some students also mention that the grading system has already determined by teachers.

### 6.2 Findings and Discussions Related to Task Allocation

According to Table 6, we find that the phenomenon of unequal distribution of tasks is common among students. This somehow contradicts with the initial target of group work. Combining the investigation results of grade allocation (Figure 1) and reasons for uneven distribution of tasks (Figure 2), we try to give some suggestions for further group work. Since the ability cannot be improved in a short time and it may be the result of many reasons, setting incentives is a more direct way to encourage participants to pay more attention. Differentiation of course score can be a good way. Naturally, people wish to be distinguished from others. Also, setting mutual evaluation system in determining the project score can encourage group members to take up their responsibilities.

### 6.3 Findings and Discussions Related to the Finish Time

According to Figure 4, it seems that the distribution of the finish time of last group work and homework are quite similar. However, this does not mean that group collaboration has little impact on individuals since the bar chart only tells the overall distribution of finish time and cannot reflect their relations and the difference of finish time for each individual. In previous analysis, we have already known that there are differences between finish time of last group work and usual homework so here we would like to look into their relations.

To test whether the finish time of group collaboration influences that of individual homework, we apply Pearson's chi-square test to assess the independence of these two variables. According to the result, the p-value is significant (0.0005), indicating that the two variables are dependent. Therefore, we can claim that the finish time of group collaboration has effect on that of individual homework, which inspires us to believe that a motivated group can lead to the improvement of individual efficiency. This gives us the idea that we are able to utilize group collaboration to promote self-efficiency.

**6.4 Various Non-significant Tests**

As our questionnaire doesn't contain questions that measure continuous variables, we try to apply many chi-square tests to see the correlation. However, there are some factors that we think have correlations, but tested as nonsignificant.

The following is a list of some of the nonsignificant tests:

- Tendency to be a group leader/member & Selection criterion for team members (ability, participation)
- Tendency to be a group leader/member & Gender
- Tendency to be a group leader/member & Priority of the work
- Selection criteria for team members(ability, participation) & Gender

· Expected grading system & Whether the last groupwork was evenly distributed

· The impact on work-and-rest system & The finish time of teamwork

· The impact on work-and-rest system & Grades

……

Take the tendency to be a group leader and the selection criteria for team members as an example. We used to think the person who prefers to be a group member may want their groupmates to have more specialized knowledge, but the result turns out to be nonsignificant. This means no matter the person wants to be a team leader or team member, he/she regards “enthusiasm” as the more important factor. This gives us an insight that the willingness to undertake tasks matters more than the professional ability of task solving.

# 7 Conclusions and Suggestions

## 7.1 Summary of Conclusions

We have discussed and surveyed group work mainly from three aspects: group structure, participation and efficiency and influences.

We will give a conclusion to summarize.

In the aspect of group structure, most people prefer a group consisting of three members. The qualities they want the leader and team member to possess are their personal choices, independent of their genders, majors or preference of roles in the group. The grading methods differ significantly between expectation and reality.

For participation and efficiency, unpunctual problem is widespread among students. More than 40% of the students made a plan in their last group cooperation according to our estimation and most students fulfilled their plan quite well, which reflects a relative high efficiency in this aspect.

Group work do have some impacts on participants apart from study. It can be figured out from survey that group collaboration has certain influence on schedule. Social skills and presentation skills are the two main aspects of development.

**7.2 Suggestions**

We also want to explore what improvement can be made to construct an ideal group. Here we give some suggestions.

First, we define the word 'ideal': An ideal group should be efficient, fair, and highly involved.

We think efficiency is closely related to group size. According to Felder (2010), four people is a preferrable size. If the group size is too large, there might exists loafing problem. If the group size is too small, each group member may be assigned with too much workload.[1]

Then we will discuss fairness from two aspects, task allocation and grading.

1) Task Allocation

Our target is that every group member fully plays his/her role in group work, and roughly allocate the task evenly. However, survey results show that unequal task distribution is widespread among group work. To improve this situation, we think grading system should be adjusted, grading should be combined with task allocation.

2) Grading

First of all, we think grading with distinction is important. Also, other methods like evaluating group work from both the final work and the process along with replacing penalty with bonus might have positive impact on students' enthusiasm, and encourage students to engage in group work actively. [2] Students are more willing to participate once they are encouraged.

The methods mentioned above all contribute to high engagement of group work.

## 8 Supplementary Information

In this part, we try to make supplement to our questionnaire.

In a survey about group collaboration targeted to students in a college, the questionnaire contains the following aspects:[3]

1) Whether the respondents understand the methods of group study. e.g., brainstorm, think-discuss-exchange method, etc.

2) Group collaboration pattern. e.g., ‘all the group members discuss the subject of the study, have clear division of work, complete the task collectively’, ‘one or two of the group members discuss the subject of the study, and assign the task to others’, or even ‘only one or two of the group members participate in the group collaboration’.

3) Whether there have been ‘free-riders’ (those who seldom or never participate in and contribute to the group tasks) in the group and how do the respondents think of them. e.g., say nothing and just do more by oneself, talk to them in face, etc.

4) What will influence the efficiency of group collaboration. e.g., good atmosphere of cooperation, whether the tasks the teacher assigned are suitable for cooperation, whether there is a group leader who have outstanding leadership, etc.

Also, Johnson brothers proposed several reasons why the group collaboration becomes noneffective apart from existence of ‘free-riders’. Here ‘noneffective’ means that the outcome of the group collaboration is not satisfactory. Immature group collaboration pattern due to short collaboration time, groupthink (all the group members think about things similarly) and ambiguous division of work due to large group size, etc. can also result in noneffective group collaboration.[4]

## Reference

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## Appendix

# 南科大学生的小组合作现状

同学您好，我们是 MA314 抽样调查课程的第一小组，我们调查的目的是了解南科大学生对于小组合作的态度和看法、小组合作的参与度与效率，探究小组合作对个人的影响。本问卷若无特殊标明均为单项选择题，各项答案无对错之分，请同学根据个人实际情况进行填写。我们将不对结果进行个别呈现并保证您的回复被严格保密。感谢您的配合。

我们的组员包括：11812532 骆镒玲、11811634 叶可欣、11812136 齐馨月、11812232 陶昕冉、11812432 范馨、11610129 李子闻

1.请问您在以下哪种类型的课上参与过小组讨论？（多选）
A.通识课（比如高数、化学等）
B.专业课
C.公选课（比如人文、社科类课程）
D.其他_____

2.请问您上学期有多少门课有小组合作？
A.无
B.一门课
C.两门课
D.三门课及以上

3.请问您上次的小组合作中是否设置小组长（小组长的职责包括分配任务中对内对外协调沟通等）？
A.有
B.没有

4.您认为哪种情况下需要小组合作（请按重要性由高到低排序，1 代表最重要）
[ ]专业性强
[ ]任务繁重
[ ]需要在短时间内产出
[ ]其他_____(选填，若有其他想法可以填写在此处)

5.您更希望在组里担任的角色是？
A.组长
B.组员

6.请问您觉得组长最应该具有什么特质?（多选，最多选两个）
[ ]沟通能力强
[ ]专业能力扎实

[ ]领导能力突出
[ ]有责任心
[ ]其他_____
7.请问您组队过程中更看重组员的什么特质？
A.能力强
B.积极性高
C.其他_____

8.请问您认为小组的人数为多少时既能保证大家的参与度又能发挥每个人的能力？
A.2 人
B.3 人
C.≥4 人

9.请问您期望小组最后的成绩评定是以哪种方式进行的？
A.按贡献和参与度打分
B.所有人平均打分
C.其他_____

10.请问您在现实中大多数情况下的成绩评定是以哪种方式进行的？
A.按贡献和参与度打分
B.所有人平均打分
C.其他_____

11.请问您在上一次小组合作中，您的小组成员是否准时参加讨论？
A.所有组员总是准时参加
B.有组员偶尔不准时（3 成以下）
C.有组员经常不准时（3-6 成）
D.有组员总是不准时（超过 6 成）

12.请问您上次小组合作的任务是否分配得均匀？
A.是(跳至 14 题)
B.不是（跳至 13 题）

13.请问您认为导致任务分配不均匀的最主要原因是？（跳至 14 题）
A.重视程度
B.兴趣
C.能力
D.其他_____

14.请问您认为小组合作的哪一个环节会花费较多的时间和精力进行讨论？
A.选题阶段
B.执行阶段
C.展示阶段

D.其他_____

15.请问在上次的小组合作中，您的小组是否会在在课程没有强制要求的情况下，在执行任务前自行列一个计划（计划就是拆分任务并且设置相应的完成节点）？
A.有（跳至 16 题）
B.没有（跳至 17 题）

16.请问您的小组是否完成计划？（跳至 17 题）
[ ]（请填写数字 1-4，1 为完全没完成，4 为严格按计划完成）

17.请问和个人任务相比，您是否会优先完成小组任务？
[ ]（请填写数字 1-4，1 为个人任务优先，4 为小组任务优先）

18.请问在上一次小组合作中，您的任务在 ddl 前什么时候完成？
A.ddl 当天
B.ddl 前 1-3 天
C.ddl 前 4-7 天
D.更早之前
E.错过 ddl

19.请问在平时完成独立作业时，您的任务在 ddl 前什么时候完成？
A.ddl 当天
B.ddl 前 1-3 天
C.ddl 前 4-7 天
D.更早之前
E.错过 ddl

20.请问您是否觉得小组合作改变了您平时的作息时间？
[ ]（请填写数字 1-4，1 为完全无影响，4 为严重影响）

21.请问您觉得小组合作对您提升最大的方面是？
A.人际交往能力
B.展示表达能力
C.专业能力
D.其他_____

22.请问您的性别为？
A.男
B.女

23.请问您的年级为？
A.大一
B.大二
C.大三

D.大四
E.其他
24.请问您的专业为？
专业：_____

----------问卷已结束，谢谢合作。----------