

## Does diversity-based group formation work for students?

Goytom Abraha Kahsay

Department of Food and Resource Economics  
University of Copenhagen

**Summary.** Working in group is believed to benefit students learning outcomes and develop better relationship, communication and team skills which are also important later in their professional life. However, previous research finds that these benefits may depend on the size, type and structure of the groups. I investigate whether groups formed by the teacher on the basis of academic and cultural diversity affects students perceived benefits and learning outcomes in an experiment implemented in a course “Advanced Development Economics” given for master’s students at the University of Copenhagen. I find that students diversity-based exogenous group formation increases learning outcomes as measured both by perceived new things learnt, better relationship, communication and team skills as well as final grades. However, the results also highlight the need for teachers to facilitate the group process, especially at the beginning, since diversity-based groups take some time before they function properly. While these results shade light on the role of diversity-based group formation in university teaching and learning, caution is required when interpreting the results given the small sample size and context of the experiment.

### Introduction

Universities are attracting increasingly diverse student populations with many international students. In order to accommodate such diversities, some scholars suggest that universities should adopt inclusive and interactive strategies, in which students’ diversity is viewed as a resource for a successful teaching and learning process (Broughan & Hunt, 2012). The authors further suggest that such strategy should promote students’ interaction

which may increase awareness and understanding of different perspectives, better preparation for work place and greater feeling of belongingness.

One way of designing an interactive and participatory teaching and learning strategy is to enable students work in groups. These groups could be discussion groups, study groups, writing groups, feedback groups, or project groups (Christensen, 2015). Irrespective of the type of groups, working in group is expected to promote intellectual and social learning, creative problem solving, and improve relations among students by increasing trust and friendliness (Cohen & Lotan, 2014). This also ensures that students share their knowledge, skills, and experience; discuss freely on alternative ideas, solutions, and dimensions; and get feedback from their peers, which are normally quicker, more accessible, friendly-framed, and understandable. Finally, this may promote research and problem-based teaching (Brodie, 2012) and motivate students in the course and classroom (Scott, 2005; McWilliam, 2008).

Yet, the successes of group works in fostering productive teaching and learning process may depend on a number of factors (Christensen, 2015). Firstly, there is heterogeneous preference among students regarding working in groups. Some students seem to enjoy group work while others dislike it to the extent of avoiding group work-oriented courses (Christensen, 2015). Secondly, there is a lot of debate on how groups should be formed. Should groups be formed formally by the teacher (based on principles or randomly) or informally by the students on their own? What is the optimal group size for a productive group work? Should groups be homogeneous or heterogeneous? Can working in group benefit all students by allowing middle and advanced level students to seek additional academic challenges as well as helping low level students get peer support? Thus, there are a number of challenges that the teacher should be aware of in deciding on the type, size, and structure of groups.

In this project, I aim to contribute to the ongoing debate on the formation of groups. I investigate whether groups formed by the teacher on the basis of academic and cultural diversity affects students' perceived benefits and grades. I investigate this by directly implementing diversity-based group works in a master's course "Advanced Development Economics" at the University of Copenhagen. I collected a baseline (right before the groups are formed) and a follow-up (at the end of the course) data from the course participants in an online survey. I find that students perceived various benefits from working in a group of diverse academic and cultural background. They perceive that they learn new things and develop better

relationship, communication and team skills. Moreover, looking at the final grades, the average grade is much higher than a similar course a year before. While higher grades could partly be attributed to differences in the composition of students between the years with and without the experiment, a particularly higher grade in the term paper, the part of the course that is most likely to be affected by the group work, points to the role of the diversity-based group formation. Students suggest that such group formation may achieve its intended benefit if teachers are involved in facilitating the group process, especially at the beginning since diversity-based groups take some time before the function properly. While these are interesting results that shade light on the role of diversity-based group formation in helping students achieve intended learning outcomes of the course, caution is required when interpreting the results given the small sample size and context of the experiment.

## **Case study**

The course “Advanced Development Economics” is a master’s course intended for students who have background in economics with a strong understanding of microeconomics and microeconometrics. The course was given in block 2 (2017-2018). The course focuses on households’ and firms’ behavior as well as the functioning of markets and institutions in developing countries. By the end of the course, students are expected to achieve the following in the field of development economics: 1) Comprehend and diagnose concepts and theoretical models; 2) Develop abilities to discuss, criticize, interpret, and replicate theoretical and empirical papers; and 3) Develop abilities to write a theoretical or empirical paper. To help students achieve these learning outcomes, the course has three components (lectures and small group discussions, group-based practical exercises, and individual project works). The final grade for the course is the average of grades in the oral exam and individual term papers. In order to pass the course, students must pass both parts of the exam.

## **Group formation**

From my previous experience in teaching the course, participants are diverse with respect to academic and cultural background. The challenge is therefore to design teaching and learning activities that ensure that students

actively participate and engage in class and use the diversity to their benefit. One way of ensuring this is to form groups of students with diverse background. From my experience, leaving group formation to the students results in groups of friends, which may limit students' ability to interact with fellow students that have different perspectives. Thus, I design groups myself, reflecting the diversity of the students. A group of 4 students was formed based on specific criteria (Nationality; previous experience with microeconomics and microeconometrics, development economics; and previous ability to work with STATA software). I collected information from students in order to help identify specific attributes of each student. Based on this information, participants in the course came from 9 different countries with diverse knowledge and skills.

## Data

I collected information on students background (age, gender, study program, etc.); previous experience with group works (benefits, challenges, heterogeneous vs homogeneous groups, student-formed vs teacher-formed groups, etc.); and perceptions about group works (preferences, intentions, expectation, benefits, relevance, challenges, etc.) in two rounds, right before I formed the groups and at the end of my course, in an online survey. The data collected at the end of the course particularly includes information on students' experiences with the group works in my course.

To assess the relationship between diversity-based exogenous group formation and productive teaching and learning process (student satisfaction and perceived benefits), I will compare the results of the data before and after diversity-based exogenous group works. Since the sample is very small, I will only focus on correlations using descriptive statistics and students' qualitative opinions. Moreover, the final grades are used to draw learning outcomes of the group formation.

## Results

10 students answered the survey in the first round and another 8 in the second round. Pooling the data, 67% of the students in the course are female. The age distribution ranges from 22-33 with a mean age of 24. The responds are from 7 different nationalities with Danish students accounting for about

28%. All the respondents answer that they have economics background and most of them are in their second-year of master's degree.

All the respondents had previous experience with group works in their university education (both Bachelor and Master's) and the average group size was 4. Figure 13.1 below show the distribution of number of group works that responds had experienced in their previous university education.

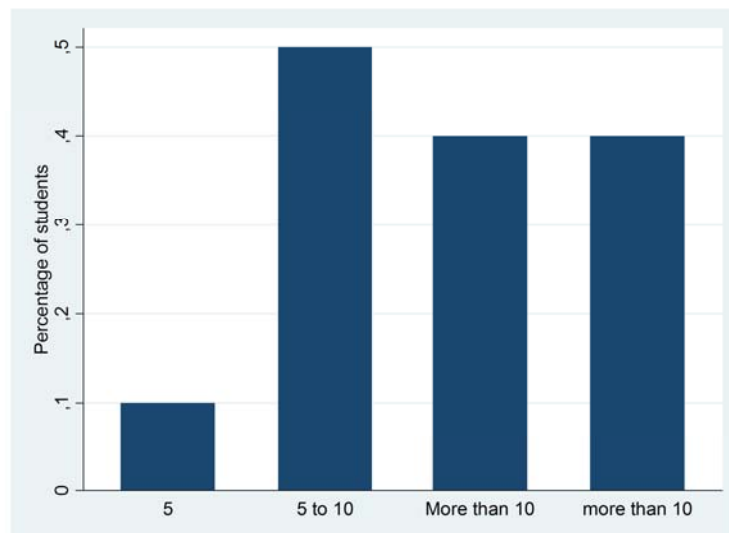


Fig. 13.1: Number of groups works students experience in their previous university education

From the figure, it is clear that students have significant experience with working in groups in their previous university education.

Table 13.1 below summarizes students experience and perceived benefits of working in groups. In the survey, students are asked if they agree to a number of statements ("1: I do not agree/No not at all" to 5: "I totally agree/Yes absolutely and "1: Never" to 5: "Always"). The results show that students had positive experience with previous group works. Most agreed with the various benefits (learn new thing, better outcome, good relationships, and team skills) of working in groups. While students had experience with groups formed by teachers, most of them were not diversity-based. An interesting result is that students like diverse groups and appreciate the role of the teacher in facilitating the group process, but they prefer more if they form their own groups. Yet, they acknowledged that most of the groups formed by students are less diverse. This is a very interesting dilemma. On

the one hand students believe that groups with diverse cultural and academic background are more beneficial in terms of learning outcomes. On the other hand, they want to form their own groups which ended up becoming less-diverse. There could be a number of reasons for this dilemma. First, although students perceived an advantage in diversity-based exogenous groups the transaction costs may be very high to justify these benefits. These costs may be in the form of communication problem and free riding by some students. Second, it could be that students benefit from process based learning outcomes such as better communication and team work skills, but not in terms of actual learning outcomes (e.g., as proxied by final grades). This may suggest that teachers should pay attention to the group process. Teachers could facilitate the group process mitigating communication problems and misunderstanding as well as direct groups towards achieving both process based and final learning outcomes. For instance, teachers could encourage groups to use Absalon in facilitating group works to which the teacher could monitor and intervene whenever it is necessary.

Table 13.1: Experience, benefits, and challenges of working in groups

Questions	N	mean	sd	min	max
I have had very positive experiences with group work	10	3,20	0,79	2	4
<b>Benefits of group works</b>					
Better learning outcomes	10	3,30	1,06	2	5
Learn new things	10	3,70	0,95	2	5
Develop good relationships	10	3,50	0,85	2	4
Develop team skills	10	3,60	0,70	2	4
<b>Formation of groups</b>					
Student formed groups are less diverse	10	3,60	1,35	1	5
Teacher should facilitate group process	10	3,70	0,82	2	5
I like groups of diverse groups	10	3,50	0,85	2	5
I prefer student-formed groups	10	3,60	0,97	2	5
I like diversity-based exogenous group formation	10	3,00	1,25	1	5
<b>Experience with diversity-based exogenous group formation</b>					
In previous group works, the teacher formed groups	10	3,00	1,15	2	5
Previous groups follow diversity-based exogenous group formation	10	2,50	1,08	1	4

The results from the second round survey, in which I ask them specifically about the group process employed in the course “Advanced Development Economics”, are presented in Table 13.2 below. These results are in

line with those in Table 13.1 that working in groups help learn new things, develop team skills and relationships. However, unlike in Table 13.1, students have now a clear preference for diversity-based exogenous group formation.

Table 13.2: Perceptions and benefits of diversity-based exogenous group formation in the course “Advanced Development Economics”

Questions	N	mean	sd	min	max
I have had very positive experiences with group work	8	3,38	0,92	2	5
<b>Perceived benefits</b>					
Learn new things	8	3,38	0,74	2	4
Develop good relationships	8	3,75	0,46	3	4
Develop team skills	8	3,13	0,64	2	4
<b>Diversity-based exogenous group formation</b>					
I like that the group was a mix of diverse academic and cultural background	8	3,63	1,41	2	5
I would have preferred a group formed by the students themselves	8	2,88	1,81	1	5

Students were also asked to give opinion regarding benefits and challenges of working in groups. Communication problems (attitude and accent), free riding, hyper-perfectionist students, diverse working styles and academic background are mentioned as challenges of working in group.

Students specifically mentioned diverse opinions, opportunity to learn from each other, feeling of “not excluded”, and a better integrated class room as benefits of working in a group composed of diverse academic and cultural background. For instance, one respondent wrote “*Get a more differentiated perspective on the topic, exchange experience and understand how other governments and institutions work.*”

However, students also mentioned that diversity-based exogenously formed groups require more time before they function properly, particularly given the diversity in the level of education and communication problems. One student pointed that “*Schedule is a big issue when we have block system, since it’s very hard to find time out side of class to work together (if necessary). Academic level is also a problem if people have different levels of experience working in stata, the topics etc. This is also a prob-*

*lem for people with less experience since it can be difficult to "catch up" and be a good group member when the others might initially know much more than you, making your learning outcome less".* This is in line with the idea that teachers could play an important role, potential by employing technology (e.g., Absalon), in facilitating and monitoring functioning of diversity-based group works. Finally, the average grade for the course is found to be higher compared to the same course in the previous year. It is true that differences in the composition of student could play a role in the average grade difference. For instance, if this year's participants have better background on microeconomics and mircoeconometrics, which are the pre-requests of the course, the average grade could be higher. While it is difficult to disentangle the effect of the group work formation on the final grade from student composition, a particularly higher grade in the term paper points to the role of the group formation. This is particularly because the term paper is the part of the course that is most likely to be affected by the group work. Although it has to be written individually, the activities in the group works are directly linked to the requirements in the term paper.

## **Conclusion**

Working in group can help students achieve the intended learning outcomes a course (Astin et al., 1993; Tinto, 1987). It can help students develop communication abilities, relationships and team skills which are also important later in professional life (Mannix & Neale, 2005; Caruso & Williams Woolley, 2008). However, working in group has its own challenges, such as communication issues, that might negatively influence teaching and learning process. The type, size, and structure of groups also seem to have an effect on whether students reap the mentioned benefits.

In this paper, I investigate whether the way groups are formed (by students themselves or formed by the teacher on the basis of diversity) has an effect on students' experience and perceived benefits. I conducted a small experiment by implementing diversity-based exogenous group formation in my course "Advanced Development Economics" which was given to master's students. I collected a baseline data right before the groups are formed and a follow-up data at the end of the course in an online survey. I find that student like working in groups of diverse academic and cultural background formed by the teacher. Participants mentioned that working in group helped them learn new things, develop better relationship, communication



and team skills. Moreover, the average grade (a proxy for better learning outcomes) is higher as compared to the average grade of the course in the previous year. However, students mentioned that such groups need time before they function properly and this may be a problem in block system. They suggest that this could be improved if the teacher facilitates the group process, especially at the beginning. This call for the role of the teacher in facilitating and monitoring group process and activities, for instance, using Absalon.

While the results from this project shade light on the role of diversity-based group formation, it is very difficult to conclude based on such small sample. Moreover, this group formation may be course/context dependent. Thus, future studies that include a larger representative sample are needed before arriving at conclusion.

## References

- Astin, A. W. et al. (1993). *What matters in college?: four critical years revisited*. Jossey-Bass San Francisco.
- Brodie, L. (2012). Problem-based learning. In L. Hunt & D. Chalmers (Eds.), *University teaching in focus: a learning-centred approach* (pp. 145–163). ACER Press, Melbourne.
- Broughan, C. & Hunt, L. (2012). Inclusive teaching. In L. Hunt & D. Chalmers (Eds.), *University teaching in focus: a learning-centred approach* (pp. 145–163). ACER Press, Melbourne.
- Caruso, H. M. & Williams Woolley, A. (2008). Harnessing the power of emergent interdependence to promote diverse team collaboration. In *Diversity and groups* (pp. 245–266). Emerald Group Publishing Limited.
- Christensen, G. (2015). Group work. In J. D. L. Rienecker P.S. Jorgensen & G. Ingerslev (Eds.), *University teaching and learning* (pp. 189–199). Samfundslitteratur.
- Cohen, E. G. & Lotan, R. A. (2014). *Designing groupwork: strategies for the heterogeneous classroom third edition*. Teachers College Press.
- Mannix, E. & Neale, M. A. (2005). What differences make a difference? the promise and reality of diverse teams in organizations. *Psychological science in the public interest*, 6(2), 31–55.
- McWilliam, F. (2008). Unlearning how to teach. *Innovations in Education and Teaching International*, 45(3), 263–269.

- Scott, G. (2005). Accessing the student voice: using cequery to identify what retains students and promotes engagement in productive learning in australian higher education. Final report, Department of Education, Science and Training (DEST).
- Tinto, V. (1987). *Leaving college: rethinking the causes and cures of student attrition*. University of Chicago Press.