

THE PERCEPTIONS ON GROUP WORK AMONG MALAYSIAN PRE-UNIVERSITY GIFTED STUDENTS

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ABSTRACT

Gifted students have intense motivation to explore ideas and difficult problems in detail and in depth, and if they have also confidence and good communication skills, gifted students will become the most valuable asset to the community. Other than that, communication skills are essential for the students to interact effectively with other students with diverse cognitive ability during their pursuit to higher education. Thus, this paper investigates the perception of pair or group work among a group of Malaysian pre-university gifted students in Vector Calculus course. Instrument used in this study is an open-ended questionnaire. Results show that most students view Vector Calculus as a hard course. They perceive group work as good and helpful other than it affects the way they learn. On the other hand, some students have negative view on group work indicating the giftedness quality among them. Thus, it is suggested for educators to carefully employ grouping strategies to cater Malaysian pre-university gifted students especially in a hard course.

Keywords: Confidence, gifted adolescence, motivation, group work, hard course.

INTRODUCTION

Group work consists of three or more students working in a group, while pair work involves two students working together to complete a given task. Group work is popular among educators to move from traditional to student-centered learning. This is because, group work seems to be an effective way to engage students, to offer students the opportunity for collaborative working, and to offer the possibility of reduced marking loads (Gibbs, 2009). The advantage of reduced marking loads makes group work the most common practice in tertiary education where large number of students taking one particular course.

Group work promotes active learning and hence enhances student learning. Group work at education institutions is often viewed as being beneficial in developing students' generic skills such as communication, leadership and critical thinking. Through working in groups, students are able to explore diversity of opinions and efficiently tackle project too large to effectively handle on an individual basis (Gatfield, 1999). Mello (1993) states major benefits of group work are 1) "students can gain an insight into group dynamics"; 2) they can tackle more comprehensive assignments", 3) "interpersonal skills can be developed"; 4) "students are more exposed to others' points of view"; and 5) "be more prepared for the commercial world". In addition, group work can also be a convenient and helpful tool to develop a supportive attitude towards learning (Sofroniou & Poutos, 2016).

In mathematics, group work can help students face difficult tasks that are well beyond the capacities of individual work especially for students in developmental phase. Even though the tasks are difficult, gifted students on the contrary might have different views of group work. In university level, most classes are being conducted in lecture hall, which makes differentiated instructions impossible. Students are often given assignments which are sometimes beyond their capacity if they want to do them alone. Thus, gifted students in pre-university level have to practice to work in groups to improve their confidence and communication skills for university adjustments.

The research objectives are to determine gifted students' perceptions on Vector Calculus course and on group work. Other than that, the research also aims at determining whether group work affect the gifted students' way of learning.

REVIEW OF LITERATURE

Several studies showed that gifted students often demonstrate a greater preference for working individually rather than in pairs or groups (Kanevsky, 2011; Rogers, 2007). Gifted students prefer independent study, independent project, and self-instructional materials in their areas of passion and talent which does not mean that they are effective in an independent learning activity. However, Rogers (2007) states that powerful academic effects and small to moderate affective effects are produced when gifted children are grouped with like-ability or like-performing peers and exposed to differentiated learning tasks and expectations. Students' perception defined by their characters, challenges educators to find strategies with gifted students. In the study done by Taylor (2016) in regular classes in Western Australian primary schools, grouping strategies that often applied by teachers to cater gifted students were same-ability grouping, mixed-ability grouping and allow choice – group vs. individual. Blumfeld, Marx, Soloway, & Krajcik (1996) stated that peer learning can be a powerful tool but not a guaranteed solution to educational problems.

RESEARCH METHODOLOGY

In order to the get students' perception of pair or group work, a study was conducted involving 52 pre-university gifted students from the National University of Malaysia. These students were constituted from three classes undertaking Vector Calculus as a compulsory course. Students were grouped in random where each group consists of two or three students. Each class was given one assignment on the topic of integration while they were in the midst of learning that topic. Teachers were forbidden from giving the answer for the assignment but they were allowed to give hints. This assignment consisted of 6 sets of questions. Each group in each class was given different set of questions from other groups in that class. Questionnaires were distributed to students at a selected time about 2 weeks after the submission of assignments. Students' responses in the open-ended questions were analyzed and then classified into the following themes:

For item 1: How are you finding Vector Calculus course so far?

Theme 1: Vector calculus is hard

Theme 2: Vector calculus is interesting

Theme 3: Vector calculus is tolerable

Theme 4: Vector calculus is boring

For item 2: How are you finding working in pair or group so far in this course?

Theme 1: Working in group is good or helpful

Theme 2: Working in group lessens the burden

Theme 3: Working in group is not really necessary

For item 3: Does working in pair or group affect the way you learn?

Theme 1: Working in group affects the way I learn

Theme 2: Working in group does not affect the way I learn

Theme 3: I am not sure whether working in group affects the way I learn

RESEARCH FINDINGS

Students' responses are tabulated in Table 1 and Table 2.

Table 1: Students' responses for item 1 – 3

Item	Number of students	
1	Vector calculus is hard	23 (44.23%)
	Vector calculus is interesting	13 (25%)
	Vector calculus is tolerable	15 (28.85%)
	Vector calculus is boring	1 (1.92%)
2	Working in group is good or helpful	43 (82.69%)
	Working in group lessens the burden	5 (9.62%)
	Working in group is not really necessary	4 (7.69%)
3	Working in group affects the way I learn	33 (63.46%)
	Working in group does not affect the way I learn	18 (34.62%)
	I am not sure whether working in group affects the way I learn	1 (1.92%)

Table 2: Students’ responses for item 4 – 10

Item statements	Number of students		
	Disagree	Moderate	Agree
I learn from my partner or group mates	6(11.54%)	24(46.15%)	22(42.31%)
I learn from collaborating with other pairs or groups	4(7.69%)	18(34.62%)	30(57.69%)
I think that pair or group work is a good idea	2(3.85%)	23(44.23%)	27(51.92%)
I enjoy taking part in pair or group work	4(7.69%)	23(44.23%)	25(48.08%)
I think that partners or group members are given equal opportunity to contribute	4(7.69%)	13(25%)	35(67.31%)
I think that I will learn more about the subject matter working in a group/pair than I would if I worked by myself	2(3.85%)	26(50%)	24(46.15%)
I think pair or group work allows some students to be free rider, do little work, whilst on the back of stronger students	10(19.23%)	22(42.31%)	20(38.46%)

From Table 1 and 2, for item 1: “How are you finding Vector Calculus course so far?”, most students found that Vector Calculus was hard while one student found that the course was boring. The rest of students viewed Vector Calculus as interesting and tolerable. This shows that students most students had positive view on Vector Calculus. Examples of students’ responses:

“*Complicated and not fun*” (Respondent 15).

“*Interesting but exhausting. Need to do a lot of practices*” (Respondent 34).

“*Can be learnt but I don't find it interesting*” (Respondent 52).

“*So far so good. Not experiencing difficulties in understanding its concept*” (Respondent 29).

“*It's quite hard but I think it's due to me not having strong foundation in basic algebra (exponential, natural log and trigonometric)*” (Respondent 42).

Respondent 42 stated that the course was quite hard because of his/her mathematical ability. This student questioned his/her ability indicating low confidence in doing mathematics. Meanwhile, Respondent 2 and Respondent 17 had independently said that they found that the course was hard because the techniques of integration used for solving problems were not clear and too many formulas that they had to familiarize with. In addition, there was a student who face difficulty to focus during the teaching and learning session. Some students said they needed a lot of exercises while some others said that there were a lot to digest for this course.

For item 2: “How are you finding working in pair or group so far in this course?”, most students viewed group work as good and helpful. An example of students’ responses:

“*Working in pair gives lots of benefits when the other pair understood what had been taught in class and vice versa. So far I love my pair*” (Respondent 2).

There were small number of students who feel that working in group was not really necessary. Examples of students' responses:

"I don't think it is quite effective because we end up dividing the task eventually" (Respondent 46).

"Not really necessary" (Respondent 12).

For item 3: "Does working in pair or group affect the way you learn?", most students found that working in group affected the way they learn. Examples of students' responses:

"Somehow, it affects me as sometimes I must have missed or lost in class, so my groupmates can actually teach me that again or remind me" (Respondent 4).

"Yes. Because working is actually kind of hard for me because I prefer working alone" (Respondent 49).

Students said that working in pair or group helped them revise and understand the content of the course better than before. Working in pair or group also motivated them in learning as they can share thoughts and opinions. However, Respondent 49 said that he/she had difficulty working in pair or group because of greater preference in working independently.

For item 4 – 10, students were mostly agreeing to the statements that they learned from collaborating with other pairs or groups, that they thought that pair or group work was a good idea, that they enjoyed taking part in pair or group work and that they thought that their partner or group members were given equal opportunity to contribute. Students were moderately agreeing to statements that they learned from partner or group mates, that they thought that they would learn more about the subject matter working in a group or pair than they would if they worked by themselves and that they thought pair or group work allowed some students to be free rider.

DISCUSSION

Some issues arise in the students' perception.

Issue 1: Vector Calculus was viewed as a hard course.

Vector Calculus introduces students to integral calculus. Integral calculus extends the single integral to double and triple integrals. Aside from that, students learn to work with vectors in two or three dimensions. Integral calculus challenges students to learn more complicated concepts in mathematics. According to Noraini Idris (2009), Calculus has traditionally one of the most difficult concepts for students to understand and master. Although most students learned the specific algorithm and procedure that they are taught, their general conceptual understanding often remains remarkably deficient. Since the content of Vector Calculus is an extension from Calculus course, therefore it is not surprising that most students found it as a hard course. Nonetheless, some students stated that Vector Calculus was interesting. It might be because of

the direct application of some concepts to physical problems had made students value the course as 'alive'.

Issue 2: Students learn more from collaborating with other pairs or groups than with their partner or group mates

From results in Table 2, more students learned from collaborating with other pairs or groups than with their partner or group mates. This shows that students did not depend much on their partners or group mates. They were ready to collaborate with others in order to successfully complete the given task.

Issue 3: There are students who have negative view of group work

Some students might have other personal issues underpinning that drove them to favor working alone than to work with other group members. This indicates the giftedness quality among the students as gifted students have greater preference in working alone (Kanevsky, 2011; Rogers, 2007).

CONCLUSION

The results indicate that pre-university students viewed Vector Calculus as a hard course. In addition, they had positive view on pair or group work in this course. They learned more from collaborating with other pairs or groups than from their partner or group mates. They also preferred pair or group work in learning the subject matter to work by themselves. However, students agreed that pair or group work allowed some students to be free rider. There were also students who had negative view on group work and the course itself. Thus, it is suggested for educators to employ grouping strategies in a hard course. Results can be positive if careful planning is done in grouping gifted students as they have the intense motivation in exploring hard problems.

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