

## **The Use of Collaborative Learning to Improve Critical Thinking of General Certificate of Education Advanced-Level Psychology Students: An Experiment**

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**Abstract:** The Quasi-experiment compared the performance of psychology students who were taught lessons using the Traditional Individual Learning Method and the experimental collaborative learning strategy. Teaching and assessment in this exploratory experiment were done in three cycles. Findings consistently indicated that the collaborative learning method was more effective than the Individual Learning Model. For the results to be generalizable, a replication of the present study using a large random sample of schools and students was recommended. Obtaining similar results in the repeated study would confirm the suitability of the collaborative learning method for use by teachers and students in Brunei.

**Key words:** Collaborative learning, critical thinking, general certificate of education advanced-level, pre-university, psychology students

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### **INTRODUCTION**

The scarcity of psychological research on teaching in Brunei may partly be attributed to non-availability of suitable research instruments. Brunei's mother tongue and official language is Bahasa Melayu but most of the suitable and available research instruments are written in standard British or American English and tend to be too long (Mundia and Bakar, 2010; Mundia, 2011). Efforts need to be made to translate as many instruments as possible to facilitate social research in the country. However, a small number of studies on the Brunei education system have been conducted despite this problem. Previous research shows that Brunei preschool, primary, secondary and tertiary students have both personal problems such as disabilities (Bradshaw and Mundia, 2005, 2006; Mundia, 2006, 2007, 2010a; Haq and Mundia, 2012) and academic learning or study problems (Mundia, 1998, 2012a; Minako and Mundia, 2014) in school which need to be addressed. Academic problems in particular are manifested by low achievement in subjects that challenge students such as English, mathematics and sciences. Mathematics, for example is one subject where cooperative learning could help struggling students as suggested by research (Mundia, 2010b). Unfortunately students do not often know how to solve their own problems. Therefore, teachers and parents are supposed to have adequate

suitable social skills that could help them to attend to students' problems effectively (Tait and Mundia, 2012a). In view of these problems, changes have now been made in the Brunei teacher education system to ensure that trained teachers could competently handle students' personal and academic problems to improve the quality of education (Mundia, 2012b; Haq and Mundia, 2012; Tait and Mundia, 2012b, 2014). The teachers are themselves supposed to be in good mental health to be able to assist students effectively in their cognitive tasks (Mundia, 2013). However, none of these studies had a strong focus on the collaborative teaching method.

**Research on collaborative learning method:** Literature suggests that collaborative learning is the same teaching or learning procedure that is also known as cooperative learning or group work (Gokhale, 1995; Bonwell and Eison, 1991). However, some researchers contest that there are minor differences between collaborative and cooperative learning. One of the higher-order skills 21st century skills promoted by both collaborative and cooperative learning is critical thinking. Both strategies emphasize skills that can enable students to work effectively as individuals and in group settings.

**Objectives of the study:** Since achievement in some Brunei school subjects is somewhat not good, it is believed adopting new methods teaching might help

improve performance. Collaborative learning is one of the teaching strategies identified by research to be effective in helping low performing students. Psychology is one of the subjects in which GCE A-Level students do not perform well in Brunei. Thus, the purpose of the present study was to find out whether the use of collaborative teaching method might improve achievement in psychology.

## MATERIALS AND METHODS

The quantitative research approach was preferred for the current study. The steps taken to carry out the investigation are described below.

**Design:** A one-group (repeated measures) pretest-posttest experimental design was used on three cycles (Fig. 1). For each cycle, the independent variable in the present study was pretest scores obtained from the individual (old or usual) method of instruction. Similarly for each cycle, the dependent variable was the posttest scores obtained from collaborative (new) method of instruction.

**Participants:** The participants for the present exploratory experiment consisted of year 13 psychology class at one sixth form center in Brunei that was chosen by simple random selection procedure. The selected class had 16 students (11 females and 5 males).

**Procedures:** Prior to embarking on the project, permission to conduct the study was obtained from the Ministry of Education in the Government of Brunei Darussalam as well as from the school. The purposes of the study and ethical conditions for being involved in the study were explained to the students. All the students participated

voluntarily in the study. The study met all the ethical requirements stipulated by the government of Brunei for conducting research using human participants.

**Instruments:** For each cycle of the experimental stages conducted, three different psychology-related research studies were used in teaching students via individual and collaborative instructional methods. The items used in the present study focused on only three aspects of critical thinking as follows:

**Creative thinking:** To generate imaginative ideas, unique perspectives, innovative strategies or novel (alternative) approaches to traditional practices.

**Evaluative thinking:** To critically judge the validity (truth), morality (ethics) or aesthetic (artistic) value of ideas, data or products by using relevant assessment criteria (standards for judging quality).

**Balanced thinking:** To carefully consider arguments/evidence for and against a particular position or viewpoint.

The students responses to the critical thinking items were blindly scored by two independent and experienced psychology teachers. This operation resulted into an average inter-marker agreement of 86% as an index of inter-reliability. In addition, the items were deemed to have adequate content validity as they were drawn from the GCE A-Level syllabus taught to year 13 students. Furthermore, the study was thought to have good ecological validity as the experiment was part of the ongoing in-class psychology lessons within the school.

**Data analysis:** Quantitative data were analyzed by descriptive statistics (mean, median, mode, standard deviation and range) and t-tests for repeated groups using SPSS Version 22.

## RESULTS

The findings from three phases of the experiment are presented in Table 1. The cooperative learning procedure produced higher results at each cycle of the experiment. Table 2 shows how significant the differences in scores produced by the two learning methods were at each stage of the experiment. All the three differences were associated with an appreciable Effect Size (ES). In particular, the ES for experimental cycle 1 was more than one third of a standard deviation (Table 2 and Fig. 2).

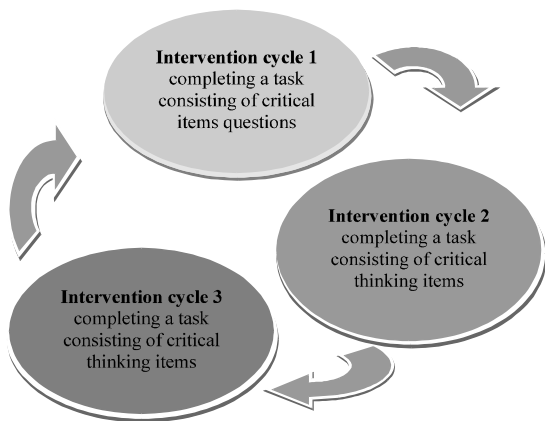


Fig. 1: One group pretest-posttest experimental stages

Table 1: Descriptive statistics from three experimental cycles (N = 16)

Cycles*	1	2	3	4	5	6	7	8	9
Mean	60.375	78.375	19.500	69.750	81.437	18.062	76.875	87.812	10.937
Median	63.000	75.000	25.000	75.000	81.500	25.000	75.000	88.000	12.000
Mode	50.000	75.000	25.000	75.000	75.000	25.000	75.000	88.000	0.000
SD	13.129	8.640	11.177	11.156	12.181	9.036	10.111	10.127	8.992
Range	50.000	25.000	38.000	38.000	50.000	25.000	25.000	37.000	25.000

\*1: Cycle 1, individual learning; 2: Cycle 1, collaborative learning; 3: Cycle 1, gain scores; 4: Cycle 2, individual learning; 5: Cycle 2, collaborative learning; 6: Cycle 2, gain scores; 7: Cycle 3, individual learning; 8: Cycle 3, collaborative learning; 9: Cycle 3, gain scores

Table 2: t-test values between the two learning methods<sup>†</sup>

Experiments	ANCOVA F	t (df = 30)	Sig. (2-tailed)	Effect size
Cycle 1	2.505 <sup>ns</sup>	-4.581	0.000	0.412
Cycle 2	0.031 <sup>ns</sup>	-2.830	0.008	0.211
Cycle 3	0.755 <sup>ns</sup>	-3.057	0.005	0.238

<sup>†</sup>For means and SD values see Table 1

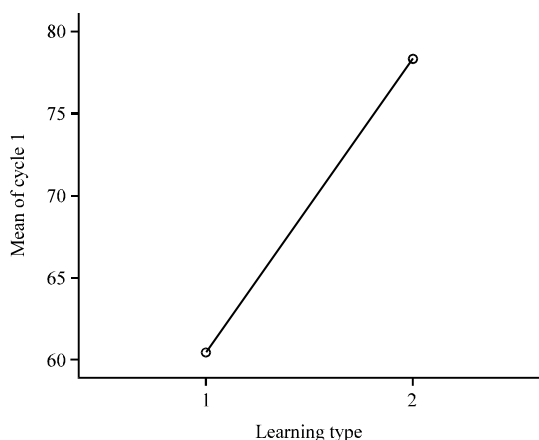


Fig. 2: Differences in learning types (1 = individual learning; 2 = collaborative learning)

### DISCUSSION

The results of the present study showed that collaborative learning consistently improved the students' performance. This was important for Brunei education system where students' achievement in some subjects such as Mathematics, Science, English and Psychology is challenged. Cooperative learning (in all its variants such as team learning and group work) could help students at risk of performing low and failing. Research suggests that learning was fundamentally influenced by the context and activity in which it was embedded (Brown *et al.*, 1989). For this reason, collaborative learning activities seem to immerse students in challenging tasks or questions. Rather than begin with facts and ideas and then move on to applications, collaborative learning activities frequently begin with problems for which students must supply facts and ideas. Previous research by Gokhale (1995) also found the collaborative learning strategy to be more effective than the traditional individual learning method. Research has consistently emphasized the importance of involving

student groups actively in learning in every stage of learning (Astin, 1985; Bonwell and Eison, 1991). Curtis and Lawson showed the effectiveness of collaboration in online distance learning. In the case of collaborative learning, the focus is on what students can do to initiate and manage their own learning. Based on the findings of the present study, the collaborative learning method appears to be suitable for Brunei Darussalam education system. Replicating the current study with a larger number of participants would enable generalization of the findings. The major drawback to the collaborative learning strategy is the fact is that not everyone makes an equal amount of contribution. Critical thinking is one of the important skills that students acquire from Collaborative Learning Method (Gokhale, 1995). Collaborative learning is therefore highly recommended for use in Brunei schools to help boost students' achievement in subjects they find too difficult such as Mathematics, English, Science and Psychology.

### CONCLUSION

It is quite important to know what learning strategies would benefit students most in the 21st century. As knowledge and skills are increasingly being shared among participants (teachers and students) in the 21st century, the role of the teacher emphasizes facilitating learning. A facilitating teacher helps students connect new information to their experiences and to learning in other areas, helps students figure out what to do when they are stuck and helps them learn how to learn. Not only that a facilitating teacher in a collaborative learning environment provides a level of information and support to maximize the ability of students to take responsibility for their own learning. Lastly, an important outcome from collaborative learning is the acquisition of critical thinking skills that enable students to develop other higher-order skills such as analysis, synthesis, application and evaluation.

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