Enhancing Academic Achievement through Cooperative Learning in Colleges of Education in South Western Nigeria.

[1]Ojo O. Akinniyi, [2]Olugbode M. Lola & [3]Ogunmola D. Leke
Department of Curriculum and Instruction
School of Education,
Emmanuel Alayande College of Education, Oyo,
Oyo State.
P.M.B. 1010, Oyo.
[3]davidlekeogunmol@gmail.com, [1]oloyedeakinniyi@yahoo.com,
[2]lolaolugbode@yahoo.com

ABSTRACT
The popular method of teaching in higher institution of learning, which is lecture method, is not directly yielding the expected outcome in the performance of students. Hence, this study employed the cooperative learning strategy in enhancing academic achievement in measurement and evaluation in two colleges of education in Nigeria. This study adopted quasi experimental research design. Purposive sampling was used to select one state college of education and one federal college of Education for the study. Measurement and evaluation was the only course selected for the study and the total of 2,120 students from Emmanuel Alayande College of Education, Oyo and 1,370 students from Federal college of Education Osiele participated in the study, total sample used was 3,490. An instrument constructed by the researchers tagged Achievement Test on Measurement and Evaluation (ATOMAE) was used to collect the data. The data was analysed using t-test and Ancova. The cooperative strategy shows the mean value of 7.46 with standard deviation of 4.49 while the control shows the mean value of 10.48 with standard deviation of 3.70 for pretest. There exists a significant difference in the cognitive entry characteristics of students in the treatment and control group (t_{cal} 20.69>t_{tab}1.96). The result of ANCOVA revealed that there is significant difference between mean post-test score within schools since $F_{4,3468 = 116.968}$ and $P<0.05$. Students, especially in the colleges of education can perform better in their study with the use of cooperative learning. The study concludes that there was significant interaction between schools, gender and treatment on students' achievement. Some recommendations were made based on the findings as follows: there is a need to educate classroom teachers and curriculum planners on the advantages of using cooperative learning strategy. And also, encourage them to implement it as a method of instruction at all levels of education. Also, Government should organize training on the use of cooperative learning for teachers and so on.

KEYWORDS: *Cooperative, Learning, Cooperative learning, Colleges of Education, students, enhancing, Academic achievement.*

INTRODUCTION

Teaching is a process that facilitates learning, and for learning to take place, the teacher (facilitator) must make deliberate efforts to utilize different techniques or strategies that have been tried out and proved to be effective in order to ensure that learning takes place (Olugbode, 2012). Nweke (1990) posits that teaching implies helping people to gain the knowledge and attitude which make them responsible citizens, earn a living and lead a meaningful and rewarding life. Odor (1990) further stated that teaching is the process of guiding, stimulating, motivating and evaluating the learner in an organized educational institution through a well-planned and selected education programme of instruction towards the

achievement of the desired goals, including the all-round development of the learner. Hence, the teacher is seen as a person of many parts, a guide, stimulator, motivator and evaluator, among others. The impact of teaching is not really shown or has great influence considering the performance of students especially in higher institutions like colleges of education.

Onwuka (1994) defines teaching methods/strategies as "processes, course of action or a method of operation which vary according to circumstances". The popular method of teaching in higher education is lecture method which is instructor-centered but the teachers need a method of teaching that require active participation of student which will aids mastery and such method should be student-centered. There are numerous methods that can be adopted during teaching and learning process in order to help students develop the skill that will be useful for them in solving any emanating problems in their day to day activities (Stein 2001). General poor performance of students cannot be allowed to go unattended to in higher institutions of learning, researches have shown that most of the graduate, when they get to labour market, they are not able to defend their certificate because they read only to pass and methods of teaching adopted in higher institution seems not to encourage mastery, hence there is need to seek ways of improving teaching and learning processes in the school. Various methods of teaching are employed to teach in our schools to ensure effective teaching and learning on the part of teachers and students respectively but the failure rate has not reduced. On this note, there is need to reduce the failure rate and ensure proper understanding of the subject matter in order to improve on their academic performance, lecturers must manage knowledge through innovation, dissemination and utilization of effective techniques that will be of help to students to reduce mass failures, in those subjects that involves large students' population like education courses and to improve on students' attendance at lecture. In order to find solutions to problems of student's poor learning outcomes in higher institutions and to actively involved students in teaching and learning process, active participation and involvement is required. Therefore, this study is interested in the contribution of cooperative learning strategy which is noted as a method that aids retention, raises students` self-esteem and become lifelong learners and teaching methods that promotes higher achievements for all grade levels in all subject area, to the academic achievement of students.

Cooperative learning (sometimes called collaborative learning) can be described as learning which occurs as a result of interactions between members of a collective group (meaning two or more individuals). Ozokereha, (2009) defined cooperative learning as teaching strategy in which small teams each with students of different levels of ability use a variety of learning activities to improve the understanding of a subject. Cooperative learning is a teaching strategy that is student centred and a systematic pedagogical strategy that encourages small groups of student to work together for the achievement of a common goal. Johnson (2009) confirms the effectiveness of cooperative learning in higher education. In order to find solutions to problems of student's poor learning outcomes in higher institutions and to actively involved students in teaching and learning process active participation and involvement is required, it is noted that methods that aids retention raises students' self – esteem and become lifelong learners and teaching methods that promotes higher achievements for all grade levels in all subject area.

Cooperative Learning Strategy and Students' Learning Outcomes

In order to achieve the objectives of learning, classroom environment should incorporate students' interactions with the teacher, the learning material and with one another. It is believed that interactions among students' foster exchange of ideas in a non-authoritative manner in a peaceful atmosphere, which gives freedom on the part of students to ask questions and express opinion, seek clarification and justification from one another. In view of this, the ever-growing body of literature consists of three basic types of peer interaction: cooperative learning, peer collaboration and peer tutoring.

Cooperative learning is a generic term for various small groups in which pupils work together to maximize their own and each other's learning (Johnson, 2009). In cooperative learning situations, the pupils are expected to help, discuss and argue with each other, assess each other's current knowledge and fill gaps in each other's understanding. Studies on cooperative learning have demonstrated improved students achievement (Heeden, 2003; Johnson, Johnson & Stanne, 2000). In Nigeria, a number of studies

have also been carried out on the use of cooperative learning. These studies were carried out by Alebiosu (1998) as well as Kalu (2007) in Chemistry and Mathematics respectively. The findings of these studies have provided further empirical support on the usefulness of cooperative learning strategy over and above other strategies used in those studies.

Also in the study carried out by Christian and Pepple (2012) investigated the effects of cooperative and individualized learning strategies on students' achievement in chemistry in Rivers State. The results showed that the cooperative learning strategy was more effective on students' achievement in chemistry than the conventional method.

Hypotheses

Four null hypotheses were tested at 0.05 level of significance. They are

- There will be no significant main effect of treatments on students' achievement in Measurement and Evaluation.
- There will be no significant main effect of schools on students' achievement in Measurement and Evaluation.
- There will be no significant interaction effect of schools and treatments on students' achievement in Measurement and Evaluation.
- There will be no significant interaction effect of Schools, Gender and Treatments on students' achievement in Measurement and Evaluation.

METHODOLOGY

This study employed quasi experimental design. Experimental Group were exposed to Cooperative Learning Strategy while the control group used the lecture method (Conventional Method). The target population for this research consists of all students in the colleges of Education in South Western Nigeria. Purposive sampling technique was adopted to select one State College of Education and one Federal College of Education in Oyo and Ogun state respectively. Introduction to Measurement and Evaluation was purposively selected as the course for this study because it is one of the courses that have a wide coverage of learning which involve both theory and calculation aspects. All the students in 200 level of the five schools in each of the two Colleges were the sample for this research work. The total sample for the study is shown in the table below:

Table1: Sample of students at Emmanuel Alayande College of Education. Oyo.

S/N	NAME OF SCHOOLS	NO. OF STUDENTS
1.	School of Art and Social Sciences	520
2	School of Primary Education and Early Childhood Education.	320
3	School of Languages	220
4	School of Science	580
5	School of Vocational and Technical Education	480
	TOTAL	2,120

Figure 1: Bar chart of population of students used from various school in Emmanuel Alayande College of Education

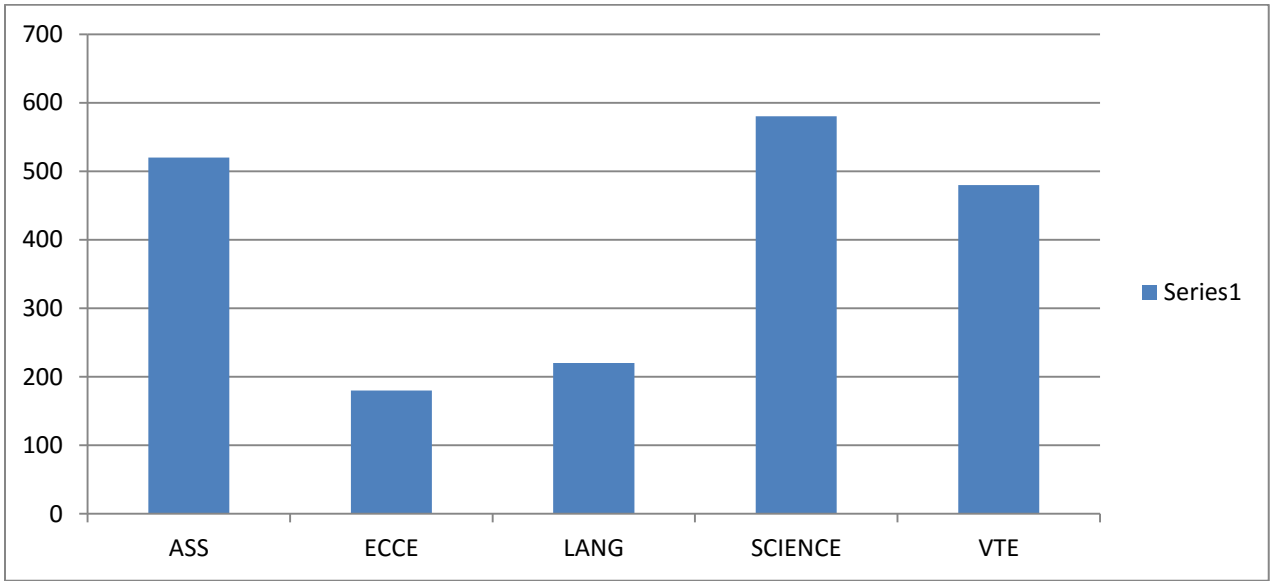

Table 2: Sample of students at Federal College of Education, Osiele, Abeokuta

S/N	NAME OF SCHOOLS	NO. OF STUDENTS
1.	School of Art and Social Sciences	320
2	School of Primary Education and Early Childhood Education.	180
3	School of Languages	148
4	School of Science	462
5	School of Vocational and Technical Education	260
	TOTAL	1,370

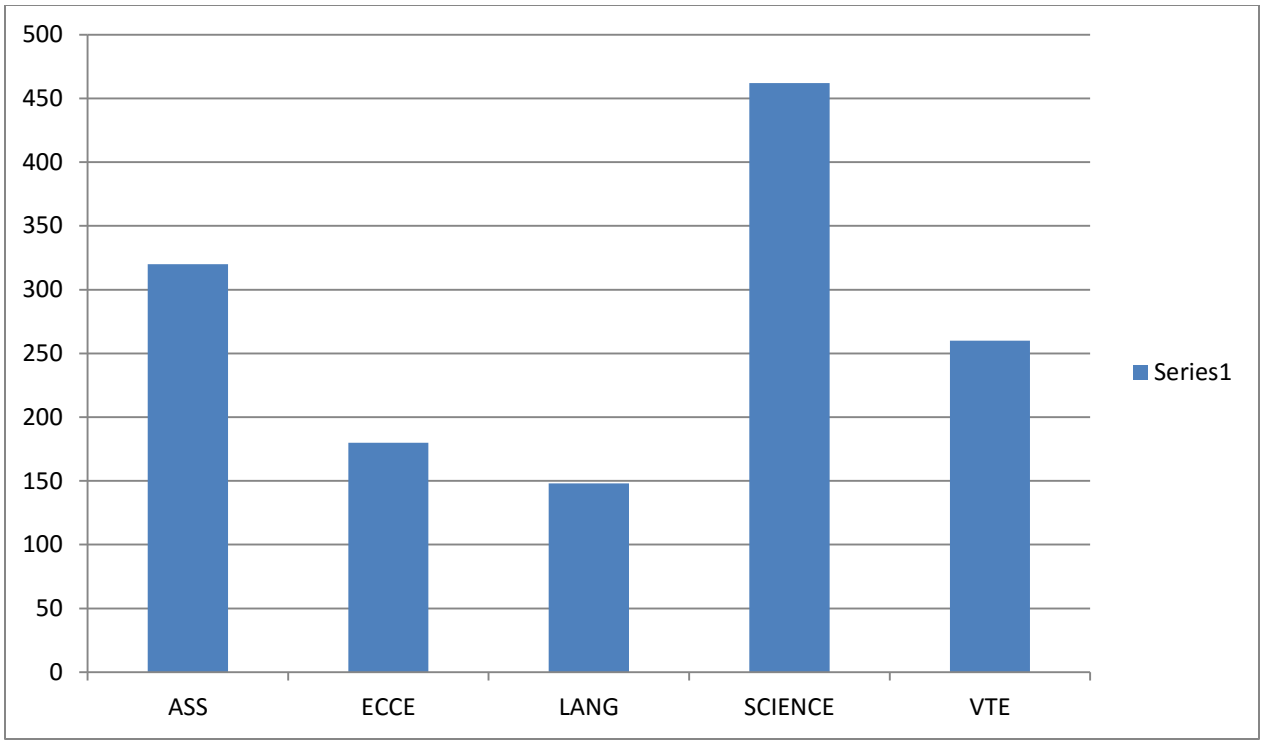

Figure 2: Bar chart of population of students used from various school in Federal College of Education, Osiele.

INSTRUMENTATION

An instrument was developed by the researchers to carry out this study. The instrument was tagged Achievement Test on Measurement and Evaluation (ATOMAE). It consisted of two sections. Section A focuses on demographic variables of the respondents (Students) such as Matric No., Sex, School, Course combination while Section B contains the fifty items (50) multiple choice achievement test on measurement and evaluation after the validation of the instrument. The instrument was administered to the students in the two colleges of Education used in the study as pretest and posttest.

Data Collection

The researchers held a meeting with the Head of Department (HOD) Curriculum and Instruction and the Head of Evaluation unit in both Colleges of Education seeking for their permission in using their students and some of their lecturers as part of research assistants. The treatment/experiment lasted for 12 weeks and take place during the second semester since the course is a second semester course. The data collection was carried out within six (6) weeks; all together 18 weeks was used for the study.

Data Analysis

The data collected was collated and analyzed using descriptive statistics, t- test and ANCOVA (Analysis of Covariance). Both the pre-test and post-test scores were analysed using descriptive statistics, t-test and analysis of covariance (ANCOVA). For all the tests of significance, alpha was fixed at 0.05.

RESULTS

Table 3: Descriptive statistics and t-test of pre-test

GROUP	N	Mean ($\bar{x}$)	Standard deviation (s)	t_{cal}	t_{tab}
Cooperative Learning strategy (Treatment)	2120	7.46	4.493	20.69	1.96

Control	1370	10.48	3.700		

The table 3 above showed that there was significant difference in the cognitive entry characteristics of students in the treatment and control groups since t_{cal} (20.69) >t_{tab} (1.96). The result of the descriptive statistics also confirmed this.

Hypothesis 1: There will be no significant main effect of treatments on students' achievement in Measurement and Evaluation.

Table 4: Descriptive statistics and t-test of Post-test

GROUP	N	Mean ($\bar{x}$)	Standard deviation (s)	t_{cal}	t_{tab}
Treatment	2120	13.98	4.226	9.45	1.96
Control	1370	12.66	3.632		

Table 4 revealed that the students with Cooperative Learning Strategy (CLS) that is, the treatment group had the highest mean score on post-test while the control group had the least score. The value of t-test also shows that there was significant difference in the post-test scores of the two groups with t_{cal} (9.45) > t_{tab} (1.96). The Treatment (experimental) group had the highest mean achievement of 13.98 while the control had the least mean achievement of 12.66.

Table 5: Summary of analysis of covariance (ANCOVA) on the posttest scores:

Source	Type II Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	21816.995[a]	20	1090.850	106.536	.000	.381
Intercept	76101.537	1	76101.537	7.432E3	.000	.682
PRETEST	12863.287	1	12863.287	1.256E3	.000	.266
SCHS	4790.649	4	1197.662	116.968	.000	.119
GENDER	5.690	1	5.690	.556	.456	.000
Treatment	5391.917	1	5391.917	526.595	.000	.132
SCHS * GENDER	102.589	4	25.647	2.505	.040	.003
SCHS * Treatment	1422.532	4	355.633	34.732	.000	.039
GENDER * Treatment	5.158	1	5.158	.504	.478	.000
SCHS * GENDER * Treatment	96.860	4	24.215	2.365	.051	.003
Error	35509.597	3468	10.239			
Total	689409.000	3489				
Corrected Total	57326.592	3488				

a. R Squared = .381 (Adjusted R Squared = .377)

Table 5 above revealed that there was significant main effect of treatment on students' achievement in Measurement and Evaluation. The cooperative Learning Strategy (CLS) has significant effect on students' achievement in measurement and evaluation which could be seen from the result of ANCOVA. At 0.05 level of significant, $F_{1,3468}$ = 526.595, P< 0.05. The null hypothesis that there was no significant main effect of treatment on students' achievement in measurement and evaluation was rejected.

Hypothesis 2: There will be no significant main effect of schools on students' achievement in measurement and evaluation.

Table 6: Descriptive statistics of schools

	N	Mean	Std	Std Error
ASS	840	14.389	4.628	.115
EDU	500	14.453	3.584	.150
LANG	368	13.289	3.714	.171
SCI	1042	12.379	3.561	.100
VTE	740	12.037	3.574	.124
Total	3490	13.46	4.054	.069

The result of ANCOVA in table 5 revealed that at 0.05 level of significance, there is significant difference between mean post test score within schools, since $F_{4,3468}$ = 116.968, and P < 0.05. Therefore, the hypothesis that there will be no significant main effect of schools in students' achievement in measurement and evaluation was rejected. It was clear from the result of analysis on table 6 that the school of Education (EDU) had the highest post-test mean score of 14.45, next was the school of Arts and Social Science (ASS) with post-test mean score of 14.39, followed by the school of Languages (LANG) with post-test mean score of 13.29, next was the school of science (SCI) with post-test mean score of 12.38 while the school of vocational and technical education (VTE) had the least post-test mean score of 12.04.

Hypothesis 3: There will be no significant interactive effect of schools and treatments on students' achievement in measurement and evaluation.

As shown on table 5, at 0.05 level of significance, $F_{4,3468}$ = 34.732 P < 0.05. The null hypothesis that there will be no significant interaction effect of schools and treatment on students' achievement in measurement and evaluation was rejected. Hence, there was significant interaction between schools and treatments.

Hypothesis 4: There will be no significant interaction effect of Schools, Gender and Treatments on students' achievement in measurement and evaluation.

As shown on table 5, at 0.05 level of significance, $F_{4,3468}$ = 2.365, P > 0.05. The null hypothesis that there will be no significant interaction effect of schools, gender and treatments on students' achievement in measurement and evaluation was rejected. Hence, there was significant interaction between schools, gender and treatments.

TABLE 7: MULTIPLE CLASSIFICATION ANALYSIS (MCA) FOR POST TEST WITH PRE TEST AS COVARIATES

Grand Mean = 13.46

Variable + Category	N	Unadjusted Deviation	Eta	Adjusted Variation	Beta
Treatment					
1. Experimental	2119	.51	-1.6	1.07	.33
2. Control	1370	-.80		-1.65	
Gender					
1. Male	1821	-.05	.01	-.06	.01
2. Female	1668	.06		.06	
Schools					
1. ASS	840	1.8	.30	1.39	.29
2. EDU	500	.88		1.38	

3. LANG 4. SCIENCE 5. VTE	368 1041 740	-.35 -.73 -1.44		.14 -.79 -1.46	
Multiple R Squared Multiple R					.353 .594

The MCA as observed on table 7 showed the students' achievement in Measurement and Evaluation of the two groups. The experimental group had the highest adjusted post-test mean score of 14.53 while the control group had the least adjusted post-test mean score of 11.81. It reveals the differential values of the pre and post treatment outcome and equally showed the effectiveness of the treatment over the control (that is, non-treatment group). These values were obtained by adding the grand mean with the respective adjusted deviation.

The table also indicates that treatment accounted for 35% ($MR^2 = 0.35$) of the variance of the participants while the remaining 65% are due to other unexpected sampling errors. From the MCA above, the column on adjusted deviation shows that before adjustment were made for, the treatment (CLS) and Control level of students achievement were .51 and -.80 respectively. After the adjustment, the effect became 1.07 and -1.65 respectively. This means that the students' achievement in measurement and evaluation will be high when instructional strategy (Cooperative Learning Strategy) is highly effective. Hence, the effectiveness of instructional strategy (Cooperative Learning Strategy) enhanced students' achievement in measurement and evaluation.

Moreover, before adjustment were made for the gender achievement were -.05 and .05 respectively. After the adjustment, the effect became -.06 and .06 respectively. This means that female can perform like their male counterpart if instructional strategy is effective. In MCA table above, the column on adjusted deviation shows that before adjustment were made for, ASS was 1.8, EDU, .88, LANG, -.35, SCIENCE, -.73 and VTE, -1.44. After the adjustment, the effect became 1.39, 1.38, .14, -.79 and -1.46 for ASS, EDU, LANG, SCIENCE AND VTE, respectively. This means that students mean achievement varies across schools.

DISCUSSION OF FINDINGS

The study shows that students that were taught with Cooperative Learning Strategy (CLS) which was the experimental group performed better than students that were in the control group. It was discovered that the CLS was effective compared to the control group. The results on post-test shows that the students taught with CLS had the highest mean score of 83.37 and standard deviation of 4.44 while the control group had the least mean score of 60.12 and standard deviation of 6.93 which shows that there was significant difference in the students' achievement in measurement and evaluation in the two groups which are the two colleges of education used for this study. This confirmed the findings of Kolawole (2007) who carried out a study on the effects of competitive and cooperative learning strategies on academic performance of Nigerian students in Mathematics. His findings revealed that cooperative learning strategy is more effective than competitive learning strategy in the teaching of Mathematics and that cooperative learning strategy should be introduced in our secondary schools in Nigeria. The finding of Ibrahim (2011) on the effect of using cooperative learning on Jordanian students with learning disabilities' performance in Mathematics indicated that there were statistically significant differences in the post-test between the control and the experimental groups in favour of the experimental group which is cooperative learning strategy. The finding in this study also corroborates that of Olugbode and Adediran (2012) who carried out a study on the impact of cooperative strategy and formative evaluation on achievement of students in Mathematics. Their findings revealed that the students exposed to formative evaluation performed better followed by those with cooperative learning strategy while those receiving conventional instruction had the least performance. Thus, the students in the control group

could be exposed to learning problems, ineffective learning which could be cumbersome as the learning continued. The variation between the Experimental groups compared with the control group was high.
In 1-way analysis, both the Treatment Groups and Schools were significant, in the 2-way interaction; there is significant interaction effect in the interactions between treatment and schools. Also, in the 3-way interactions (Treatment, School and Gender), no significant interaction exist. This agreed with the findings of (Olugbode 2002) that there was no interaction between treatment and gender. Therefore, the impact of the interaction of treatment, schools and gender on the students' achievement in measurement and evaluation is not significant.

CONCLUSION

The study revealed that the students that were taught with cooperative leaning strategy had higher students' achievement in Measurement and Evaluation compared with the control. This implies that cooperative learning strategy enhances students' academic performance.
This study has several implications which include among others the fact that the study has proved that cooperative learning strategy is effective in enhancing students' achievement in measurement and evaluation. Since the CLS technique used was effective, it reduces peer competition and isolation, and promotes academic achievement and positive interrelationships among students and teachers. In the light of this perspective, the teacher, the family, society and significant others should take time to appreciate and understand the academic and developmental challenges faced and experienced by students as to device appropriate measures to help them overcome their academic challenges. However, the school counselling psychologists can adopt the cooperative learning strategy for effective teaching and learning of measurement and evaluation and other courses in general.

RECOMMENDATIONS

Considering the results of this study, the following recommendations were made:
There is a need to educate classroom teachers and curriculum planners on the advantages of using cooperative learning strategy. And also, encourage them to implement it as a method of instruction at all levels of education.

- Government should organize training on the use of cooperative learning for teachers.
- Government should make the use of cooperative learning strategy compulsory in all schools, especially post primary and post-secondary institutions in Oyo State.
- Government should ensure the provision of basic teaching facilities that will promote the use of cooperative learning strategy in all schools.

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