



The Effectiveness Of Cooperative Learning Stad Model To Improving Student Achievement On Accounting In Iraq

Amer Abdul Sada Khlaif, Imad Kadhim Imran
Al-Muthanna Governance, Iraq

Date of Submission: 02-03-2022

Date of Acceptance: 12-03-2022

I. INTRODUCTION

In order to create a quality nation and nation should start from education [1]. Education is an important element in the intellectual life of the nation. Through education can create a professional and reliable human for the future and independence of the nation. To make it happen, we must prepare a competent young generation in the field, think broadly, have good skills and be able to apply knowledge in everyday life. Based on that understanding, education can be defined as an effort to prepare students through the guidance, teaching, and training activities for their future role [2].

From the aspect of Iraqi national development, education works to develop the ability and form the character and civilization of the dignified nation in order to educate the life of the nation, aiming to develop the quality of the student to be a believer and devout believer, noble, healthy and master of knowledge, technology, and skills [3].

This study examined the effectiveness of STAD model cooperative learning method on the achievement of secondary school students in accounting data. This information provides an understanding to the teachers of the literacy lesson in the city of Baghdad that in the process of teaching and teaching accounting there is a foundation that can be used to improve the professionalism of teachers in carrying out the process of teaching and learning in the classroom. Next by applying STAD model cooperative learning, teachers in the city of Baghdad are expected to be able to carry out teaching and learning that put students into active individuals to build their own knowledge.

In addition, Iraqi education schools and education managers can use research information as a guide to improve the quality of accounting teaching in order to achieve accounting education goals as set out in the curriculum.

The education system in Iraq has undergone a very rapid change. The changes occurred because of various educational reform efforts in education. It also affects the changing system and learning curriculum. With the change in the education system is expected to affect the country's progress. In the midst of the current tide of change and the desire of the Iraqi government to improve the quality of education in Iraq. Unfortunately, the educational goals in Iraq have not been reached, many students with low achievement, are more specific in the perks subject [4].

Conceptual Framework

According to Smith (2008), the conceptual framework is a set of proposed links between the study variables that are inputs to the specific process and results of the study. For the purpose of this study, researchers have established a conceptual framework based on two theories presented by education figures. The two theories are Piaget's cognitive theory (1985) and Vygotsky's constructivism theory (1978).

These theories explain the argument to state the stance on student academic achievement and its relationship with STAD model cooperative learning approach. Cognitive Theory Based on Piaget's Cognitive Learning Theory emphasizes the cognitive change caused by interaction and constructivism theory based on Vygotsky Prokzimal Development Zone (1978) Theory provides an explanation and emphasis on the process of knowledge building through social interactions that occur in small groups. The cooperative learning of STAD model which is principally the four of these theories becomes a comprehensive structured learning and teaching method [5].

Figure 1. illustrates the conceptual framework of the study where the cooperative learning method of STAD model is a variable that affects the achievement of accounting subjects. While the



achievement of the students in the literature is a dependent variable which is affected by the

cooperative learning of the STAD model.

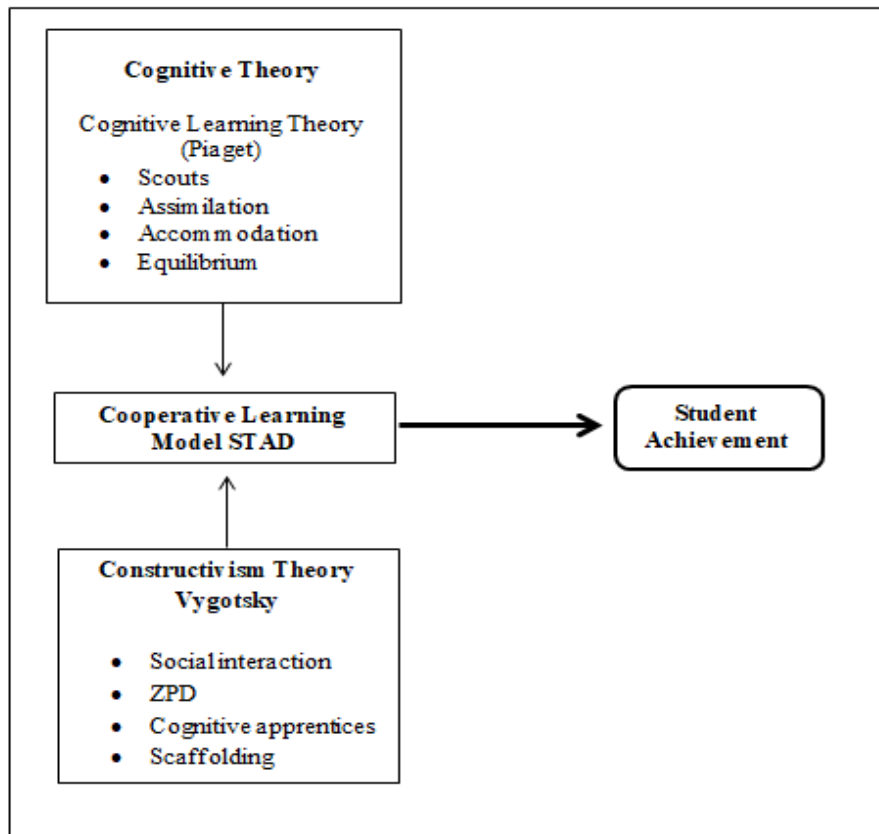


Figure 1. Conceptual framework of the study

This study uses pre-test and non-equivalent control group design. According to Creswell (2012) Non-equivalent Control Group Design is roughly the same as pretest-posttest control group design, only in this design of the treatment group and the control group is not randomly selected. In this design, either the treatment group or the control group are given the same treatment, although the group is selected and placed without going through random. Two groups were given pre-test, and then given treatment, and last post-test. The disadvantage of this design is to have more threats to internal validity than actual experiments because random

selection is not run [6]. Researchers conducted this study after taking into account the threats contained in internal validity.

Table 1 shows the quasi-experimental design method used in this study adapted from Fraenkel and Wallen (2009). Treatment groups and control groups are given pre-test. Next, the treatment group was taught using cooperative learning STAD model and control group taught with traditional teaching. After the expiry of the teaching period both groups were tested with post-test.

Table 1 Experiment Quasi Design

Experiment Group	O1	X	O2
Control Group	O1	C	O2

Note: O1: Pre test

O2: Post test

X: Learning using STAD model cooperative method.

C: Learning using traditional teaching methods.



Samples are part of the characteristics of the population. In this study sampling selection was conducted based on non random sampling. The sampling method used is purposive sampling. According to James (2014) the sampling aims to involve consideration of selection of knowledge-based samples based on the researcher and the specific purpose of assessment. According to Cohen, Manion, and Morrison (2007), sampling is intended for use when the data is not generalized to the population and only represents itself. Researchers using purposive sampling because the required sample should consist of high school achievement, medium, low and background in accordance with the requirements of cooperative learning STAD model [7].

In this study, the sample of the study was a graduate student of a secondary school in Baghdad. Form three is selected because based on Iraqi education curriculum accounting subjects are implemented in the form of three secondary schools (The Ministry of Education Iraq, 2013). In the quasi-experimental design, two sample sets are needed to make comparisons. Therefore, the researcher took a sample of 32 people for the treatment group and a sample of 33 people for the control group. The sample of the study was selected from two classes with almost identical pupils in

accounting subjects based on mid-2018 examination from Baghdad's regional education ministry data [8].

Checking Items

Once the item items are ready to be tested, the researcher examines the items in terms of form, content and language to be free from mistakes before being administered. The researcher also ensures that the instructions given are clear and easy to understand, the time allocated is reasonable with the number of questions as well as the items are arranged from simple to difficult. Next all pre test items and post-test tests.

Pioneered question items were analyzed to determine the suitability of the item through the index of difficulty and the discrimination index. The difficulty index is needed to measure the difficulty level of question items. If a question item has a level of difficulty in balance, then the question items are good, a test question should be less difficult and not too easy [9]. Based on Kirsty and Graeme (2017) the items whose difficulty index 0 is very difficult then need to be removed, between 0.00 and 0.30 is difficult and need to be modified, between 0.30 and 0.70 is moderate and can be used, between 0.70 and 1.00 is easy to change adapted, while question items whose difficulty index 1.00 should be removed as too easy [10].

$$\text{Difficulty Index (Df.I.)} = \frac{\text{Number of candidates who answer correctly (C)}}{\text{Number of candidates who are trying items (J}_K)}$$

Item analysis of items for pre test and post test based on difficulty index value (Appendix G) is shown in Table 2 and Table 3.

Table 2 Interpretation of Pre-Test Items Based on Difficulty Index.

Difficulty Index (Df.I.)	Item Interpretation	Item Number
Df.I = 0.00	Very difficult	-
0.00 < Df.I ≤ 0.30	Difficult	2
0.30 < Df.I ≤ 0.70	Simple	1,3,5,6,7,8,9
0.70 < Df.I < 1.0	Easy	4
Df.I = 1.00	Very Easy	-

Adapted from Kirsty and Graeme (2017).

Table .3 Interpretation of Post Test Based on Difficulty Index

Difficulty Index (Df.I.)	Item Interpretation	Nombor Item
Df.I = 0.00	Very difficult	-
0.00 < Df.I ≤ 0.30	Difficult	2
0.30 < Df.I ≤ 0.70	Simple	1,3,5,6,7,8,9
0.70 < Df.I < 1.0	Easy	4
Df.I = 1.00	Very Easy	-

Adapted from Kirsty and Graeme (2017).



Then the discrimination index is needed to improve the quality of the question so that it can accurately and correctly measure the indicators [11]. Based on Kirsty and Graeme (2017) items that discriminate index values between 0.40 and 1.00 are

good items that can be chosen for use, between 0.20 and 0.40 need to be modified, items lower than 0.20 need to be rebooted and items lower than 0 needs to be removed. The discrimination index is determined by the formula:

$$Discrimination\ Index = Dc.I = \frac{HS - LS}{\frac{1}{2}T}$$

HS- The number of candidates in the high score group responds correctly (30% above the total sample = 9)

LS- The number of candidates in the low score group answers the item correctly (30% on the whole of the sample = 9)

T- Total number of candidates in high score groups and low score groups

The results of item analysis for pre-test and post-test based on the discrimination index value are shown in Table 4 and Table 5.

Table 4 Interpretation of Pre-Examination Item Based on Discrimination Index

Discrimination Index(Dc.I.)	Item Interpretation	Item Number
Dc.I. ≤ 0.00	Very low negative discrimination	1,2,3,4,5,7,8,9 6
0.00 < Dc.I. ≤ 0.20	Low positive discrimination	
0.20 < Dc.I. ≤ 0.40	Positive discrimination is simple	
0.40 < Dc.I. ≤ 0.70	High positive discrimination	
0.70 < Dc.I. ≤ 1.00	Very high positive discrimination	

Adapted from Kirsty and Graeme (2017)

Table 5 Interpretation of Post-Based Test Based Items on Discrimination Index

Discrimination Index(Dc.I.)	Item Interpretation	Item Number
Dc.I. ≤ 0.00	Very low negative discrimination	1,2,3,4,5,7,8,9 6
0.00 < Dc.I. ≤ 0.20	Low positive discrimination	
0.20 < Dc.I. ≤ 0.40	Positive discrimination is simple	
0.40 < Dc.I. ≤ 0.70	High positive discrimination	
0.70 < Dc.I. ≤ 1.00	Very high positive discrimination	

Adapted from Kirsty and Graeme (2017)

Co-operative teaching and learning STAD model is a method that gives priority to group work awards. Understanding a concept through this method is done by sharing the problem and opinion between students. Cooperative learning STAD model has an impact on education as internal motivation can be nurtured and cognitive skills enhanced among peers. The cooperative learning of the STAD model is also a combination of constructivism learning that emphasizes discovery

learning and sees the acquisition of knowledge as a social activity [12].

In this study, the effectiveness of STAD model cooperative learning was identified through comparison with traditional approach learning. Four research questions have been suggested for this study. To answer the study question, the analysis of the study was done by comparing the pre-test to treatment and control groups. The t-test analysis showed that there was no significant difference in



the mathematical achievement in the pre-test group treatment and the control group.

The t-test analysis results for the first study questionnaire showed that the samples from both groups had an equivalent achievement before being treated with STAD model co-operative learning methods and traditional teaching methods. According to Ehsan (2012), the current level of knowledge available to pupils before treatment was important so that it did not affect the findings of the study later [13].

II. RESULT AND DISCUSSION

Four null hypotheses have been presented in this study. Independent samples t-test were used to determine whether there was a difference in student achievement in accounting subjects between treatment groups and control groups. While paired-

samples t-test was used to determine whether there was an increase in student achievement in accounting subjects in their respective study groups. Levene tests are conducted to determine the uniformity of variants. Skewness and Kurtosis tests are conducted to determine data normality.

Variance Uniformity Test

Levene test is performed on pre test scores to determine the uniformity of the variance between the two groups. Sample variants are uniform if the value of $p > .05$ (Field, 2009). Table 6 shows the value of $p = .372$ obtained from the Levene test on the pre-treatment test group and the control group is more than $.05$. These results indicate that the variants are uniform and the two groups formed are of similar population.

Table 6. Levene Test Analysis for Uniform Test Variants Uniformity

F	Sig
.807	.372

Normalization Test

All data must be normalized before the t-test can be performed on the data (Field, 2009). A data is said to be normal if both Skewness and Kurtosis values are within -1.96 and $+1.96$.

Based on Table 7, Skewness and Kurtosis values for both pre-test and post-test are within -1.96 and $+1.96$. The findings conclude that all scores for pre-test and post-test are normal and t-test can be performed on these scores [14].

Table 7. Preliminary Examination Analysis of Pre and Post Test

Grup	Test	Skewness	Kurtosis
Experiment	Pre Test	1.12	-0.86
	Post Test	1.50	0.23
Control	Pre Test	1.01	-0.72
	Post Test	0.45	-0.97

Comparison Analysis Pre Testing Group Pre Treatment Group with Control Group

The first hypothesis H_{01} : There is no significant difference in mean score for student achievement in accounting subjects in pre-test group treatment with control group.

The first hypothesis null is used to identify whether there is a significant difference in mean score in the pre-test in treatment groups and control groups. Comparisons made on these two mean values determine the degree of control of the study sample in accounting subjects prior to treatment. Table 8 shows a t-test analysis results show for pre-

treatment between treatment groups and control groups.

The t-test analysis shown in Table 8 shows that the pre-treatment pre test group is ($M = 62.81$, $SD = 6.21$) and control group ($M = 61.67$, $SD = 6.08$). Mean difference was not significant at $t(63) = .75$, $p > 0.05$. The results of the analysis found that there was no significant mean difference in pre-test between treatment groups and control groups. Therefore, the first null hypothesis, H_{01} is accepted. The results of this analysis show that the two groups involved in the study have the level of control over the same accounting subjects.



Table 8. *T-test analysis for Pre-Test Group Treatment and Control Group*

Group	Mean	Standard Deviation	Difference	T	Df	Sig
Experiment	62.81	6.21	1.14	.75	63	.455
Control	61.67	6.08				

*p < .05

n = 65

Comparative Analysis Min Pre-test and Post-Treatment Testing Group

The second hypothesis H_{02} : There is no significant increase in mean score for student achievement in the accounting subjects in pre-test and post-test group treatment.

The second null hypothesis is used to identify whether there is a significant min increase in pre-test scores and post-test in the treatment group. Any improvement raised on both mean values will determine the effectiveness of STAD

model cooperative learning. Table 9 shows the results of the t-test analysis results for pre-test and post-test in the treatment group.

The t-test analysis shown in Table 9 shows that the post test min ($M = 79.69$, $SD = 4.39$) is higher than the pre test min ($M = 62.81$, $SD = 5.37$). Significant increase in mean $t(31) = -12.75$, $p < 0.05$. There was a significant increase in the achievement of accounting subjects in pre-test and post-test in the treatment group. Therefore, the second null hypothesis, H_{02} is rejected.

Table 9. *T-test analysis for Pre-Test and Post-test Testing*

Test	Mean	Standard Deviation	Difference	T	Df	Sig
Pre Test	62.81	5.38	16.88	-12.75	31	.000
Post Test	79.69	4.38				

*p < .05

n = 33

Comparison Analysis of Pre-Test Min and Post Test on Control Group

The third hypothesis H_{03} : There is no significant increase in mean score for student achievement in accounting subjects in pre test and post-test group control.

The third null hypothesis is used to identify whether there is a significant min increase in pre-test scores and post-test on control groups. Any increase in both min score determines the extent to which traditional teaching can influence the achievement of sample control groups in mastering

accounting subjects. Table 10 shows the results of the t-test analysis results for pre-test and post-test on control groups.

The t-test analysis shown in Table 10 shows that in post-test min control groups ($M = 59.55$, $SD = 6.53$) and pretest min ($M = 58.18$, $SD = 4.97$). Significant mean difference at $t(32) = -2.05$, $p > 0.05$. There was no significant increase in the achievement of accounting subjects in pre-test and post-test in the control group. Thus, the third null hypothesis, H_{03} is accepted.

Table 10 *T-Test Analysis for Pre-Test and Post Control Testing*

Test	Mean	Standard Deviation	Difference	T	Df	Sig
Pre Test	58.18	4.97	1.37	-2.05	32	.048
Post Test	59.55	6.53				

*p < .05

n = 33

Post-Test Comparison Analysis of Treatment Group with Control Group

The fourth hypothesis H_{04} : There is no significant difference in mean score for student achievement in accounting subjects in post-test group treatment with control group.

The fourth null hypothesis is used to identify whether there is a significant difference in mean score in post-test on treatment groups and control groups. Comparisons made on these two mean values determine the degree of control of the sample of the study in the accounting discipline after treatment. Table 11 shows the results of the t-



test analysis results for pre-treatment between treatment groups and control groups.

The t-test analysis shown in Table 11 shows that the postpartum treatment (M = 79.69, SD = 4.38) mean higher than the control group mean (M = 62.27, SD = 5.74). The mean difference in t (63) =

13.7, $p < 0.05$. The results of the analysis found that there was a significant mean difference in post-intervention testing between treatment groups and control groups. Hence, the fourth null hypothesis, H_{04} is rejected.

Table 11. T-Test Analysis for Post Test Group Treatment and Control Group

Group	Mean	Standard Deviation	Difference	T	Df	Sig
Experiment	79.69	4.38	17.42	13.7	63	.000
Control	62.27	5.74				

* $p < .05$
n = 65

III. CONCLUSION

In conclusion, learning by using cooperative teaching STAD model is a student-centered structured teaching approach that should be used in the teaching of secondary schools in order to improve student achievement. However, the findings of this study are only accurate for the selected research sample and for accounting subjects. The findings can also be generalized to samples from secondary schools with similar criteria and may not be generalized for other topics other than the title used in this study.

Suggestions for Further Studies

Cooperative learning STAD model is a pedagogical approach that has proven to improve mathematical communication skills. In addition, this method also deepens the relationship between the members of the group thus leading to a harmonious learning atmosphere. Although STAD model cooperative approaches cannot overcome all the learning problems faced by students, this method is an ideal alternative to replacing traditional methods.

Some advanced research proposals are listed to improve the effectiveness of cooperative learning STAD model:

- i) This study only involves the headline of the company's financial statements for form three-year high school students. Further studies should be carried out for larger samples.
- ii) In this study the researchers only make comparisons between cooperative learning STAD models with conventional teaching. Further studies can be carried out by comparing the cooperative approach of the STAD model with other learning models.
- iii) This study only uses quantitative methods with achievement test instruments. It is recommended that the study using a combination of qualitative and quantitative methods is carried out,

besides that it may also use other instruments such as questionnaire, interviews or observations so that the problems present in the cooperative learning process can be obtained from the study sample.

REFERENCES

- [1]. H. Alrayah, "The Effectiveness of Cooperative Learning Activities in Enhancing EFL Learners' Fluency," *English Lang. Teach.*, 2018, doi: 10.5539/elt.v11n4p21.
- [2]. T. Dendup and A. Onthanee, "Effectiveness of cooperative learning on english communicative ability of 4th grade students in Bhutan," *Int. J. Instr.*, 2020, doi: 10.29333/IJI.2020.13117A.
- [3]. S. Sharma and A. Bumb, "Factors affecting college students' effectiveness for cooperative learning through structural equation modelling," *Univers. J. Educ. Res.*, 2020, doi: 10.13189/ujer.2020.080933.
- [4]. Z. Mahamod and B. Somasundram, "Effectiveness of Cooperative Learning on the Achievement and Motivation of the Student in Learning Malay Language," *Creat. Educ.*, 2017, doi: 10.4236/ce.2017.815167.
- [5]. N. O. M. Al-Tamimi and R. A. Attamimi, "Effectiveness of Cooperative Learning in Enhancing Speaking Skills and Attitudes towards Learning English," *Int. J. Linguist.*, 2014, doi: 10.5296/ijl.v6i4.6114.
- [6]. M. S. JONY, "Exploring the Effectiveness of Cooperative Learning at Secondary Level in Bangladesh," *Int. J. Educ. Res. Rev.*, 2020, doi: 10.24331/ijere.669388.
- [7]. Hengki, B. Jabu, and K. Salija, "The effectiveness of cooperative learning strategy through english village for teaching speaking skill," *J. Lang. Teach. Res.*, 2017, doi: 10.17507/jltr.0802.12.
- [8]. M. D. M. Delgado Hurtado and L. Á. Castrillo Lara, "The effectiveness of



- cooperative learning in accounting: An empirical test,” *Rev. Contab. Account. Rev.*, 2015, doi: 10.1016/j.rcsar.2014.05.003.
- [9]. S. Kamaruddin and N. M. R. N. Yusoff, “The Effectiveness of Cooperative Learning Model Jigsaw and Team Games Tournament (TGT) towards Social Skills,” *Creat. Educ.*, 2019, doi: 10.4236/ce.2019.1012180.
- [10]. Sawitri, Andayani, K. Saddhono, and M. Rohmadi, “Effectiveness of cooperative learning on CIRC approaches in reading skills of high school student,” *Int. J. Adv. Sci. Technol.*, 2020.
- [11]. Suryatin, “The Effectiveness Of Cooperative Learning In The Course Of Mathematic Problem Solving,” *Indones. J. Elem. Teach. Educ.*, 2020.
- [12]. R. Rahmatullah, S. Syahril, and R. Abdullah, “The Effectiveness of the Learning Module Cooperative Learning Student Facilitator and Explaining,” *J. Educ. Technol.*, 2021, doi: 10.23887/jet.v5i1.29954.
- [13]. Asrina, N. Arsyad, and F. Arwadi, “Effectiveness of Cooperative Learning with Advisor Group Strategy in 7th Grade Mathematics Classroom,” *ARRUS J. Math. Appl. Sci.*, 2021, doi: 10.35877/mathscience554.
- [14]. K. K. Sijali, “Effectiveness of Cooperative Learning For Improving Learners’ Proficiency Level of English Language in Secondary Level Education in Nepal,” *J. NELTA*, 2018, doi: 10.3126/nelta.v22i1-2.20038.