



# Effectiveness of Think Pair Share (TPS) and Problem Based Learning (PBL) in Improving Student Ability: A Comparative Study

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**Abstract.** This study aims to prove the significance of differences in learning outcomes by applying the TPS learning model to subjects. This research design uses comparative quantitative with a quasi-experimental method (quasi-experimental). The population and sample of this study were all students of Reading and Writing Chinese as an experimental class and students of Reading and Writing Chinese as a control class at Universitas Negeri Malang. The research variable consisted of the independent variable, namely the learning model, and the dependent variable was the learning outcome. The results of research and analysis using t-test and Mann-Whitney test found that the TPS and PBL learning models could improve learning outcomes, and there were significant differences.

**Keywords:** Think Pair Share (TPS) · Problem Based Learning (PBL) · student ability

## 1 Introduction

The education factor determines the quality of a nation. Education is one of the community's efforts to advance civilization and develop science. In the era of globalization, education has a very important role [1]. Lecturers as teachers and educators are the spearhead of education, so they must improve their professionalism in facing the challenges of globalization. One of the steps that an educator must take to improve the professionalism of education is to improve the quality of learning. Good quality of learning, able to build a mentality and behavior of students to be tough in facing the challenges of global life.

The most basic activity in the whole educational process in schools is the teaching and learning process. Based on the results of research on the low learning outcomes of students, this is due to the learning process, which is dominated by traditional learning. In this learning, the classroom atmosphere tends to be teacher centered. As a result, students tend to be passive [2].

In the 2013 Curriculum, the Chinese Reading and Writing subjects should be student capable dominate because they are based on package skill informatics. But in practice, most students have difficulty. Because the subject of Reading and Writing Chinese is

one of the subjects that requires logic and practical skills. Logic can be honed through various problems with solutions that train students' abilities.

After making observations at the State University of Malang, the following results were obtained (1) The UTS results for the Mandarin Language Reading and Writing subjects by the 2020 students had an average score of less than satisfactory. Therefore, it can be assumed that student learning outcomes are not satisfactory. (2) Lecturers of Mandarin Reading and Writing subjects tend to use conventional models that still emphasize the cognitive aspects so that students become less active in the learning process. (3) The learning model used by the lecturer, namely the lecture method, makes students passive, resulting in students who do not understand the Basic Programming material. This can be seen from the lack of active students during discussions and the absence of even distribution opportunities for students to contribute moment learning takes place.

Based on those problems, the learning model used in Chinese Reading and Writing subjects should be more logical, practical, and student centered. The appropriate variation of learning models to be applied to these problems is the TPS and PBL learning models. Think Pair Share (TPS) Cooperative Learning and Problem Based Learning (PBL) models are learning models based on problem-solving. Problem-solving is closely related to Chinese Reading and Writing subjects [3].

Several studies mention that both could increase study students' results. One of them is the result of a study entitled "Comparison of Think Pair Share Cooperative Models with Problem Based Learning on Improving Outcomes and Learning Activities of Plant Physiology Learning", which states that there are differences in learning outcomes of the PBL model and the TPS model. Furthermore, based on the results obtained, it is stated that the learning outcomes of the TPS model are higher than the learning outcomes of the PBL model. Because, in general, the cooperative learning model is directed by the lecturer [4].

By applying those learning model, the learning activities can improve the quality of learning. Based on the description above, the writers were encouraged to conduct research in the form of experiments by comparing models of TPS and PBL learning at the State University of Malang. This research is entitled "The Differences in Learning Outcomes between the Application of the Think Pair Share (TPS) Cooperative Learning Model and Problem Based Learning (PBL) in the 2020 Chinese Reading and Writing Subjects at the State University of Malang.

## 2 Method

This study uses a quasi-experimental design to determine the differences in student learning outcomes between using the TPS and PBL learning models. This design uses a pretest to determine students' initial abilities and a posttest to determine student learning outcomes after being treated with both learning models (Table 1).

The variables of this research are PBL and TPS learning as independent variables, and the dependent variable is learning outcomes. The research population is the students of the class of 2020 at the Universitas Negeri Malang in the 2016/2017 academic year. The sample of this research is Reading and Writing as the experimental class and the class of 2020 as the control class.

**Table 1.** Design Experiment

Group	Pretest	Treatment	Post-test
Experiment	O1	X1	O2
Control	O3	X2	O4

**Table 2.** Results of Validation Question *Pretest* and *Posttest*

Validator	Percentage Validation	Criteria
1	92.2%	Very high
2	93.4%	Very high

The research instrument used is the treatment instrument which includes: (1) lesson plans, (2) learning materials, (3) learning media, and (4) learning model implementation sheets. While the measurement instruments include: (1) pretest questions are used to determine students' initial abilities and posttest to determine students' final scores after being treated with 30 validated test questions, and (2) observation sheets for affective and psychomotor assessment.

The instrument test includes (1) content validity test to measure the validity of the questions made on the material, construction and language domains used, (2) item validation, (3) test reliability test, (4) item difficulty level test, and (5) item discrete power test.

The data analysis technique is in the form of a prerequisite analysis test which includes: (1) normality test, which aims to determine whether the data is normally distributed or not, and (2) homogeneity test is used to determine whether the analyzed data is homogeneous or heterogeneous.

Hypothesis testing is used to determine whether there are differences in learning outcomes from cognitive, affective, and psychomotor domains were tested using t-test analysis and Mann-Whitney test using SPSS 20.

### 3 Findings

Two lecturers validated the results of the validation of the content of the pretest questions as shown in Table 2.

Results validation item question could be seen in Table 3.

Results test reliability question can be seen in Table 4.

Results test difficulty item question could be seen in Table 5.

Results test power differences could be seen in Table 6.

**Table 3.** Results Validation Item Question

No	Item Question	Amount	Informa-tion
1	2, 3, 6, 7, 8, 10, 11, 12, 14, 15, 17, 18, 19, 20, 21, 25, 27.28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39.40	30	Valid
2	1, 4, 5, 9, 13, 16, 22, 23, 24, 26	10	Not valid

**Table 4.** Results of Reliability Test

Cronbach's Alpha	Amount question
0.871	40

**Table 5.** Results of Calculation Level Difficulty Question Points

Criteria	Number Question	Amount	%
Easy	1, 15, 17, 28, 37, 39	6	15%
Currently	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 21, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 38, 40	31	77.5%
Hard	22, 23, 36	3	7.5%

**Table 6.** Results of the Power of Different Test

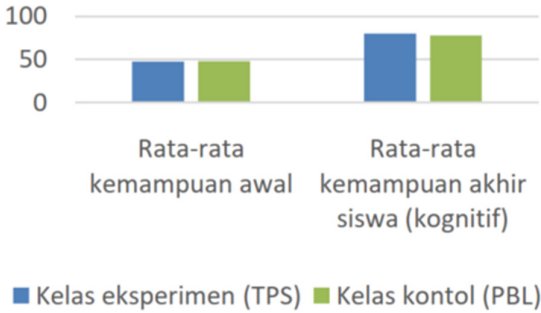
Criteria Question	Number Question	Amount	%
Bad	1, 4, 5, 9, 13, 16, 20, 22, 24, 26	10	25%
Enough	3, 11, 18, 23, 28, 29, 31, 34, 36, 38, 39, 40	13	32.5%
Criteria Question	Number Question	Amount	%
Well	2, 6, 7, 8, 12, 14, 15, 17, 19, 21, 27, 30, 32, 33, 35, 37	16	40%
Well very	10	1	2.5%

## 4 Discussion

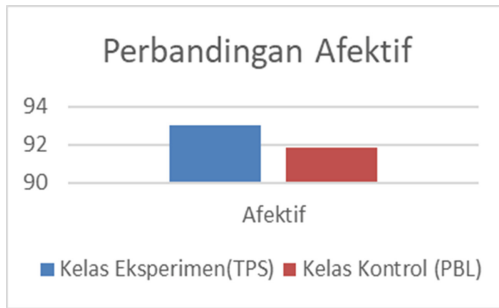
From the results study obtained scores *pretest* and *posttest* like Picture 1 following:

Based on Fig. 1, there was an increase in learning outcomes in the cognitive domain of the experimental class and the control class that had been treated.

The results of the hypothesis testing shows that  $t_{count} = 0.821$  and  $t_{table} = 2.005$ . It can be concluded that there is a significant difference in the use of *think pair share* (TPS) *cooperative learning models* and the use of *Problem Based Learning* PBL learning models on learning outcomes. Student. This is further strengthened by the learning



**Fig. 1.** Chart Score Cognitive pretest and posttest

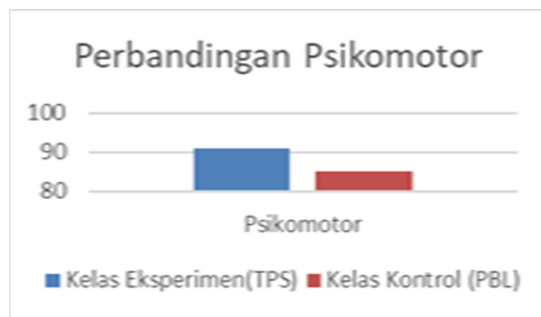


**Fig. 2.** Chart Score Affective class experiment and class control

outcomes in the Chinese Reading and Writing subjects obtained in the control class using the PBL model with a total of 30 students had an average score of 77.83, and the experimental class using the TPS model with a total of 28 students had a higher average score of 79.96 (Fig. 2).

Average effective learning outcomes experimental class students 93.03 and 91.83 for flat- flat class control. It means close difference results study (affective) Among application model TPS and PBL in the experimental and control classes. The results of the different tests with the U-test (Mann-Whitney) obtained a significance score (2-tailed) that is 0.048 ( $<0.05$ ), so  $H_{a2}$  is accepted. That is, it can be concluded that there is a significant difference in affective learning outcomes between applying the TPS and PBL models (Fig. 3).

The average psychomotor learning outcomes of experimental class students were 91.42 and 85.16 for the control class average. This means that there are differences in learning outcomes (affective) between applying the TPS and PBL models in the experimental and control classes. The results of the different tests with the U-test (Mann-Whitney) obtained a significance score (2-tailed) which is 0.000 ( $<0.05$ ), so  $H_{a3}$  is accepted. That is, it can be concluded that there is a significant difference in psychomotor learning outcomes between applying the TPS and PBL models.



**Fig. 3.** Chart score psychomotor class experiment and control class

Based on these results, a conclusion can be drawn from this study, namely: there are significant differences in cognitive, affective, and psychomotor learning outcomes between the application of model cooperative Learning Type Think Pair Share (TPS) and Model Problem-Based Learning (PBL) in the 2020 class of Mandarin Reading and Writing at the State University of Malang.

This is to the opinion of Irianto [5] namely, the factors which influence the results of the study that is intelligence, readiness child, child talent, willingness to learn, children's interests, material presentation models, lecturers' personalities, and attitudes, learning atmosphere, lecturer competencies, and community conditions.

In learning the TPS model, students' scores can be higher because students are grouped and directed to exchange ideas with each other actively. Students in groups then solve a problem, group back and so on [6]. While in PBL, students are given the problem of the students in groups to find a solution to the problem. Then students solve the problem independently.

## 5 Conclusion

Based on the results of research, it can be concluded that the average score of learning outcomes with the application of Cooperative Learning Type Think Pair Share (TPS) is 79.96 for score results learning realm cognitive, 93.03 for score results study affective domain, and 91.42 for the score of learning outcomes in the psychomotor domain.

The average score of learning outcomes with the application of Problem Based Learning (PBL) is 77.83 for the score of learning outcomes in the cognitive domain and 91.83 for the score of learning outcomes in the cognitive domain. Affective, and 85.16 for the score of learning outcomes in the psychomotor domain.

The results of the different tests of cognitive (knowledge) learning outcomes were obtained that there was a significant difference between the average knowledge domain learning outcomes using the application of the TPS (Think Pair Share) learning model and the PBL (Problem Based Learning) learning model in the class of 2020 at the State University of Malang. Students with the application of the TPS model have a higher average cognitive score than the PBL model.

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