

## Can Teaching by Invitation Technique Improve Students Basic Motion Ability?

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### Abstract

This study aimed to determine the use of technical approaches using motivational techniques in learning and its influence on the students' basic mobility in elementary schools. This study was an experimental research with a non-equivalent pre-test and post-test control group design. Forty-two elementary students in Tasikmalaya were involved as the participants. The instrument used in this study was an eye-hand coordination test conducted by calculating the number of the captured balls after being reflected to the wall for 30 seconds. The results of this study indicated that the teaching by invitation technique could enhance students' eye and hand coordination skills in elementary schools. The application of this type of technical approach also encouraged the students to be more enthusiastic in participating in the learning process because they could choose their own type of assignments according to their desires and abilities. Further study is necessary to find out its influence on different levels of education.

**Keywords:** Invitation technique, basic motion, student's ability

### Introduction

The technical learning approach is a skill-based approach which emphasizes the mastery of the basic techniques as the priority rather than the techniques of playing patterns [1,2]. This approach is generally used as a learning approach to improve the movement techniques needed to perform sports activities such as shooting, throwing balls, catching balls, and the other techniques [3]. In addition, this approach model is intended to form and develop motoric and or neuromuscular development [4]. Furthermore, this approach is implemented the basic techniques separately such as shooting, throwing and the other basic techniques. The perfection of the basic techniques of each movement is significant to determine the overall motion. Therefore, the basic movements of every kind of the techniques required in every sports should be trained and mastered perfectly and one of the best approaches to improving the perfection of technique or skill is the technical learning approach [5].

Some references claimed that the technical learning is a boring learning approach since the teachers usually only provide monotonous drill learning patterns [6,7]. The creation of an interesting learning process is necessary to foster the students' motivation and interest. Thus, it can improve the students' learning outcomes. Suherman [8] states that there are several motivational techniques in learning that can be applied by the teachers to create a comfortable learning atmosphere such as 1) Teaching by invitation, 2) Intra-task Variation, 3) Task Sheet, 4) Learning Centers, 5) Child Design Activities, and 6) Videotaping. Teaching by invitation is a motivational technique in learning that allows the students to choose various task parameters to fit with their own specific skills so that each student in a class has a variety of motion skills [9].

Motion skill is the person's ability to perform a task of motion to the maximum based on his abilities [10]. One of the important components to support motion skills is the eye-hand coordination.

This ability is the result of the coordination of motion between the visual and the motor system in carrying out a motion activity [11]. Furthermore, Erickson [12] revealed that eye-hand coordination (EHC) is the result of a hand movement reaction when obtaining a visual stimulus. Several previous studies mentioned the importance of eye-hand movement coordination in activities and exercises. Patel and Bansal [13] mentioned that the eye-hand coordination skills were very significant in various motion activities. The results of their research showed a significant effect of eye-hand coordination exercises for 4 weeks to improve motion skills. The eye-hand coordination skills are also required in various sports such as volleyball and basketball [11,14]. Furthermore, Uysal and Dúger[15] say that the eye-hand coordination exercises and daily living activities can improve the quality of life and the vision function for students aged 7-14 years with vision problems (low visions).

The technical approach has advantages such as being able to contribute to the improvement of motion skills [6,7,16]. However, when it is applied in physical education, it tends to give the students the impression that this approach is tedious and unattractive because of the monotonous learning situation during the learning process such as repeating basic technical movements which spends time. Another study mentioned that giving stimulus in the form of motivating techniques could increase the enthusiasm of senior high school students [17] and in junior high school students [18] during the physical education. In this paper, researchers assumed that implementing a technical approach using motivational techniques, especially teaching by invitation, at the elementary school level could motivate the students in learning and improve their motion coordination ability.

One of the elementary students' characteristics is moving. This means that each student spends more time in moving activities such as running, jumping, and throwing as well as playing various types of sports games. The advantages for the elementary school students, who have good coordination skills, will be able to display skills perfectly and can quickly overcome the motion problems during the training as well as the competition. Therefore, without having good coordination skills, they have possibility to face some difficulties in performing complex technical movements. In line with this statement, Coop and Rotella [19] stated that the coordination training is very good considering the phase of the skill developments, age between 8 to 12 years. Based on the aforementioned statements, this study aimed to determine the use of technical approaches using the motivation technique of teaching by invitation and its effect on the students' basic mobility in elementary schools.

## Method

This study used the non-equivalent pretest-posttest control group design[20] to see the influence of the motivation technique in teaching by invitation toward the students' basic mobility by giving two different treatments in different groups. The first group was the experimental group consisted of 21 students, 10 males and 11 females, given the treatment with motivational technique in the form of teaching by invitation. The second group was the control group consisted of twenty-one students, twelve males and nine female, given a conventional teaching technique by the teachers. All samples were the fourth grade students at UPI Lab Elementary School in Tasikmalaya Campus, Indonesia.

The learning process was conducted 12 meetings, two meetings per week. The materials presented were the basic techniques in basketball games. In the experimental group, the learning materials were determined based on the basic techniques to the combination of the techniques. The first until the third meetings were the passing technique (overhead pass, chest pass, and bounce pass), the fourth to sixth meetings were the dribbling moves, the seventh to ninth meetings were the shooting exercises, and the tenth to twelfth meetings were the combination between dribbling, passing and shooting activities. Each meeting lasted 70 minutes, the main learning activities for 50 minutes and the rest for the warning up before learning and evaluation and cooling down after the completion of the learning. Meanwhile, physical education teacher taught the controlled group students conventionally.

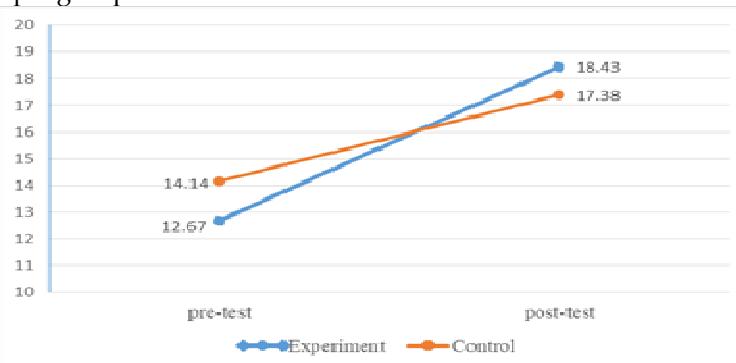
## Results and Discussion

Table 1 shows the result of the evaluation of the elementary students' eye-hand coordination abilities. The result of the experimental group pre-test was 266; average 12.67 with the minimum score was 5 while the maximum score was 25. Meanwhile, the post-test was 387, average score was 18.43, the minimum score was 10 and the maximum score was 30. In term of the controlled group, the result of the pre-test was 297, the average was 14.14, the minimum score was 10 and the maximum score was 22. Meanwhile the post-test was 365, the average score was 17.38, the minimum score was 12, and the maximum score was 26.

**Table 1. The result of the evaluation of the students' eye-hand coordination abilities**

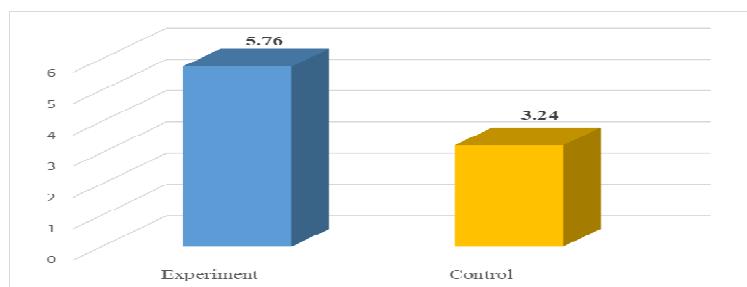
	Experiment		Controlled	
	Pre-test	Post-test	Pre-test	Post-test
Total	266	387	297	365
Average	12.67	18.43	14.14	17.38
Deviation Standard	5.09	6.14	3.28	3.38
Minimum Score	5	10	10	12
Maximum Score	25	30	22	26

The average of the experimental group evaluation toward the students' eye-hand coordination ability showed 12.67 in their pre-test and 18.43 in their post-test. Meanwhile in the controlled group, the average score of the pre-test got 14.14, which was higher than the experimental group although the average score of their post-test was lower than the experimental group, 17.48. For more details, we can see from Figure 1 about the results of the average score of the students' movement coordination ability based on sample groups.



**Figure 1. The graphic of the average score of the students' movement ability based on the research sample.**

Based on the figure 2, it shows the result of the gain score of the students' movement ability from both the experimental and the controlled groups. It shows that the gain score of the experimental group was 5.76 while the controlled group was 3.24. It means that the gap between the gain score of the sample groups was 2.52.



**Figure 2. The graphic of the gain score of the students' movement coordination result.**

The use of hypothesis test aimed to determine the impact of the implementation of teaching by invitation on the students' movement coordination abilities. From table 2, we can see the result of the hypothesis test of measuring the students' movement coordination showed that the t-count obtained was 4.409 whereas the t-table was 1.724. It meant that t-count was greater than t-table that made  $H_0$  rejected. Therefore, the data averred that teaching by invitation could significantly improve the students' movement coordination skills.

Table 2. The result of Hypothesis test

Analyzed Data	Result
$H_0$ Reject Criteria	<ul style="list-style-type: none"> <li>• t count &gt; t table</li> <li>• sig. &lt; 0.05</li> </ul>
t-count	4.409
t-table	1.724
Sig (p)	0.000
Conclusions	$H_0$ rejected

Considering the figure 1, the score obtained at the pre-test by the students in the experimental group was 12.67, which was lower than the controlled group result. However, it showed the improvement at the post-test. It occurred since the students were more delighted with the implementation of teaching by invitation as the motivational technique. It made them free to choose the tasks given by their teacher in accordance with their difficulty level, skill, and ability without reducing the core of material taught. It indicated that the students preferred choosing the tasks fit with their competencies to taking the same tasks or the implementing of the conventional techniques such as drilling that seemed monotonous and boring.

The result of the statistic data process showed that the technical approach combined with the motivational technique in the form of teaching by invitation significantly contributed positively to the movement coordination. The technical approach is one of the perfect approaches which can improve the basic technique ability of the sports especially basketball game [11]. Through the repetitive exercises atmosphere on every movement, it can lead to a good improvement in basic technical skills. Besides, the formation of an interesting and innovative learning atmosphere is one of the ways for the teachers to prevent the students from feeling bored during the learning process [21]. In this study, giving motivational technique in the form of teaching by invitation can attract the students' interest and increase their motivation so that the learning process becomes more fun and conducive.

The basketball game is identical to activities that involve various motion coordination, including eye and hand coordination. Through well-engineered learning, a combination of technical approaches oriented to technical skills and added the motivational techniques in the form of teaching by invitation; it has an impact on the maximization of the students' learning activities so that the learning outcomes can be achieved according to the target.

In line with the aforementioned statements, Another study found that the eye-hand coordination was necessary needed to improve the quality of the students' movements. Yusmawati [22] states that the learning method and the eye-hand coordination exercises can improve the kinesthetic function in the ball catching game. Besides, the motor skills have a positive relation to improve the students' (aged 8-14 years) cognitive function and performance [23]. The findings of these studies strengthen that the students' eye-hand movement coordination ability must be improved to support the students' activities.

Movement coordination, principally, is a very complex bio motoric ability [10]. This is the ability of a person to integrate different movements into a single movement pattern effectively. Everyone can do low to high difficulty levels of movements or skills which are arranged and governed from the central nervous system that has been stored in memory first. Therefore, to do the correct coordination

movement, it is also necessary to coordinate the nervous systems including the central nervous system and the peripheral nervous system with muscles, bones and joints [24].

Based on the concepts, theories, and findings of the studies, they showed that the achievement of the students' eye-hand movement coordination result has improved the in each group. However, the experimental group given the motivational technique in term of teaching by invitation showed a greater improvement.

## Conclusions

The elementary students' eye-hand coordination skill has improved both the experimental group and the control group. This study concluded that the experimental group given a technical approach in the form of teaching by invitation has improved better than the conventional approach. In addition, the students' enthusiasm in participating during the learning process also increased. For further studies, as the recommendation for the fellow researchers, they can implement this technique at different levels of schools to find out the impact more broadly.

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