



Effects of Computer-Assisted Instructions and Traditional Learning on Selected Performance Variables Among Volleyball Players

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Abstract

The purpose of the study was to find out the effects of computer-assisted instructions and traditional learning on selected performance variables among Volleyball players. To facilitate this study (60) sixty men Volleyball players from Puducherry State, South India were randomly selected as subjects whose ages ranged from 16 to 18 years. They were divided into three groups, Group I computer-assisted instructions, Group II Traditional Learning and Group III Combined (CSCL & TL). The pre-test was conducted for all 60 subjects on selected Volleyball skills such as setting and spiking skills. The experimental groups participated in the respective training program four days per week for eight weeks. After the experimental training, all sixty subjects were measured on the selected game skills. The final test scores formed the post-test scores of the subjects. The pre-test and post-test scores were subjected to statistical analysis of Covariance (ANCOVA) to find out the significance of the mean differences. Whenever the 'F' ratio for the adjusted test was found to be significant Scheffe's post hoc was used. In all cases, 0.05 level of significance was fixed to test hypotheses. The results indicated that the combined teaching was better than the isolated training in improving selected skills in Volleyball.

Key words: computer-assisted instructions, Traditional learning, Setting, Spiking and Volleyball.

INTRODUCTION

Computer-Assisted Instruction (CAI) is a teaching method that utilizes computer technology to assist and enhance the learning experience. It

involves the use of interactive software, programs, and multimedia elements to provide instruction, practice, and assessment in various subjects. CAI aims to personalize learning, offering students a more interactive and individualized approach to education. (Suthers D, 2006)

Volleyball is a sport played by two teams on a playing court divided by a Net. There are different versions available for specific circumstances in order to offer the versatility of the game to everyone. The object of the game is to send the ball over the net in order to ground it on the opponent's court and to prevent the same effort by the opponent. The team has three hits for returning the ball (in addition to the block contact). The ball is put in play with a serving, hit by the serving over the net to the opponents. The rally continues until the ball is grounded on the playing court, and goes "Out" on a team that fails (Rally Point system). When the receiving team wins a rally, it gains a point and the right to serve and its players rotate one position clockwise. (Hubert Dhanaraj, 1991)

The skills in Volleyball are Serving, Underarm pass, Overhead pass, Attacking, Setting, and Blocking.

A Volleyball pass of this type makes it easy for Volleyball players to do ball control successfully. It's crucial for Volleyball players to be prepared for contact with a ball in advance. Overhead passing is commonly used to control the ball better when passing quickly to a target and then running a quicker offense. A serve starts every point in Volleyball and is among the most important aspects of the game. Because rally scoring is used, a team can lose points if a player is unable to serve the ball over the net and inside the opponent's court.

PURPOSE OF THE STUDY

The purpose of the present study was to find out the effects of Computer-Assisted Instruction and traditional learning on selected performance variables among Volleyball players.

HYPOTHESES

1. It was hypothesized that there would be a better significant improvement in selected setting skill due to the combined CAI and Traditional learning than the isolated CAI and Traditional learning among Volleyball players.
2. It was hypothesized that there would be a better significant improvement in selected spiking skill due to the combined CAI and Traditional learning than the isolated CAI and Traditional learning among Volleyball players

REVIEW OF RELATED LITERATURE

Nuria Hernández-Sellés (2019) conducted the study to Computer-

supported collaborative learning: An analysis of the relationship between interaction, emotional support and online collaborative tools. Research has already outlined the enormous potential of Computer Supported Collaborative Learning (CSCL) to facilitate effective learning processes in higher education. There is still need, though, to build up a validated model able to portray the relationships between the key elements to design and carry out online collaboration methodologies. The purpose of this study is to establish a global model, with the aim to understand the key factors affecting online collaborative learning and to analyze their interrelation, examining the influence of interaction, intra group emotional support and online collaborative tools in learning in CSCL. The study was conducted with 106 students in the context of 5 university degree subjects that implied working on CSCL projects. At the end of the projects, the students filled out a questionnaire and the resulting data was analyzed using the partial least squares (PLS) technique. The research model proved to have a good predictive level, fulfilling the 6 hypotheses proposed. Results reveal the relevance of interaction, considering teacher-student interaction as well as student-student interaction in groups during the collaboration process. Emotional support linked to intragroup work reveals itself as a fundamental pillar in collaborative learning. On the other hand, online collaborative tools have proved to contribute to interaction between group members and to sustain emotional support. Consequently, in order to model cognitive presence, social presence and teaching presence during CSCL it is necessary to promote a fluent and satisfactory interaction, rooted on the learning process and on emotional support as well as on effective management of the online tools facilitating collaboration. Results also suggest the convenience of further research on other types of interaction in the context of CSCL.

METHODOLOGY

SELECTION OF SUBJECTS

For the purpose of the study, the investigator has selected sixty (60) boys school level Volleyball players from Puducherry State, South India by random method. The subjects ages ranged from 16 to 18 years. They were divided into three groups, group I (N=20) CAI, group II (N=20) only traditional learning, and group III (N=20) CAI and traditional learning combined.

SELECTION OF VARIABLES

1. Setting 2. Spiking

Experimental Training

The experimental groups participated in the drill practices through traditional teaching, CAI and traditional and CAI combined. For four days per week for eight weeks, 60 minutes (5.00 pm to 6.00 pm).

SKILLS DRILLS

S.No	Setting	Spiking	
1.	Toss the ball above the head and hold the ball at forehead level.	Toss the ball above the head and hit.	
2.	Toss the ball, allow it to bounce then hold the ball near the forehead	Stand in behind the attack line toss the ball and hit	
3.	Throw the ball with overhead pass action	Stand in behind the attack line and high toss after the ball one bounce hit the ball	
4.	Toss the ball above the head, touch the floor and then catch the ball	Stand in the attack line toss the ball and hit the ball	
5.	Bend forward continues to bounce the ball with the floor	Stand in the attack line and pass the ball to the setter, the setter set the ball and hit the ball	
6.	Bend forward continues to bounce the ball and move forward	The setter hit the ball to the libero and again passed the setter set the ball to the attacker and hit the ball	
Traditional Learning	CAI Training	CAI& Traditional Learning	Duration (60) Min
Warmup	Warmup	Warmup	10 min
Traditional Learning	CAI Training	CAI Training	45 min
	Drills	Drills	
Cooldown	Cooldown	Traditional Learning	5 min

STATISTICAL TECHNIQUE

The pre-test and post-test scores were subjected to statistical Analysis of Covariance (ANCOVA) to find out the significance of the mean differences. Whenever the 'F' ratio for the adjusted test was found to be significant Scheffe's post hoc was used. In all cases, a 0.05 level of significance was fixed to test the hypotheses.

RESULT AND DISCUSSION

COMPUTATION OF ANALYSIS OF COVARIANCE FOR PRE AND POST-TEST DATA ON SETTING AND SPIKING EXPERIMENTAL AND CONTROL GROUPS

		CAI	Traditional	CAI & Traditional	SV	Sum of Squares	df	Mean Squares	Obtained f
S E T T I N G	Pre Test Mean	23.70	23.85	23.30	B	3.23	2	1.62	0.95
					w	96.95	57	1.70	
	Post Test Mean	25.05	25.90	26.05	B	11.63	2	5.82	3.87*
					w	85.70	57	1.50	
	Adjusted Post Test Mean	25.01	25.78	26.22	B	14.83	2	7.41	7.02*
					w	59.19	56	1.06	
	Mean Gain	1.35	2.05	2.75					
S P I K I N G	Pre Test Mean	41.70	39.50	42.55	B	2.21	2	1.14	0.43
					w	143.66	57	2.51	
	Post Test Mean	51.35	39.85	54.50	B	323.8	2	161.12	25.56*
					w	347.4	57	5.12	
	Adjusted Post Test Mean	50.92	41.52	53.26	B	333.81	2	166.4	35.40*
					w	256.36	56	3.58	
	Mean Gain	9.65	0.35	11.95					

* Significant the table F required for 2 and 57(df) and 2 and 56(df) = 3.15

The pre-test scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Setting were 23.70, 23.85 and 23.30 respectively. The post-test scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Setting were 25.05, 25.90 and 26.05 respectively. The ordered adjusted mean scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Underarm pass were 25.01, 25.78 and 26.22 respectively. The mean gain in experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group were 1.35, 2.05 and 2.75 respectively. The obtained F value on pre-test scores 0.95 was less than the required F value of 3.15 to be significant at 0.05 level. This proved that there was no significant difference between the three experimental and combined groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test scores analysis proved that there were significant differences between the three experimental and combined groups, as the obtained F value of 3.87 was less than the required F value of 3.15. This proved that the differences between the post-test means of the subjects were not significant. Taking into consideration the pre and post-test scores among the groups, adjusted mean scores were calculated and subjected to

statistical treatment. The obtained F value of 7.02 was less than the required F value 3.15. This proved that there was no significant difference among the means due to the experimental training on the Setting.

The pre-test scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Spiking were 39.50, 42.55 and 41.70 respectively. The post-test scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Spiking were 39.85, 54.50 and 51.35 respectively. The ordered adjusted mean scores of experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group on Overhead pass 41.52, 53.26 and 50.92 respectively. The mean gain in the experimental group I (CAI), experimental group II (traditional) and experimental group III (combined) group were 0.35, 11.95 and 9.65 respectively. The obtained F value on pre-test scores 0.43 was less than the required F value of 3.15 to be significant at 0.05 level. This proved that there was no significant difference between the three experimental and combined groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test scores analysis proved that were significant differences between the three experimental and combined groups, as the obtained F value of 25.56 was less than the required F value of 3.15. This proved that the differences between the post-test means of the subjects were not significant. Taking into consideration the pre and post-test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value of 35.40 was less than the required F value 3.15. This proved that there was no significant difference among the means due to the experimental training on Spiking.

Figure 1
BAR DIAGRAM ON PRE, POST AND ORDERED ADJUSTED
MEANS OF SETTING

(Scores in Numbers)

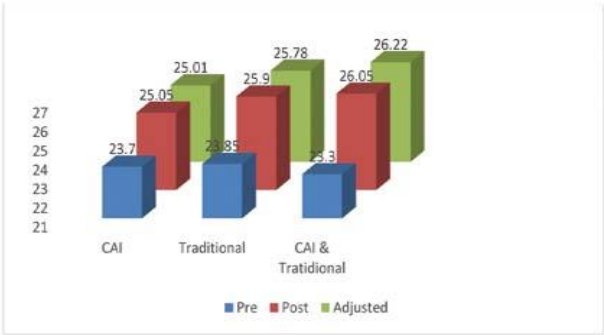


Figure 2

BAR DIAGRAM ON PRE, POST AND ORDERED ADJUSTED MEANS OF SPIKING (Scores in Numbers)

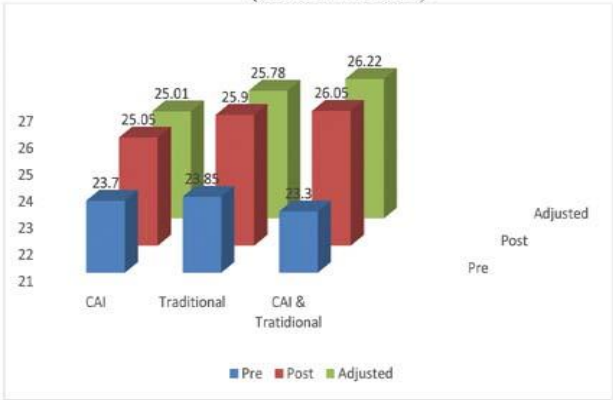


Table – II

SCHEEFF'S TEST FOR THE DIFFERENCE BETWEEN THE ADJUSTED POST-TEST PAIRED MEANS OF SETTING AND SPIKING

	Traditional	CAI	CAI & Traditional	Mean Difference	Required C.I
SETTING	-	25.78	26.22	4.24*	1.67
	25.01	25.78	-	1.84*	1.67
	25.01	-	26.22	2.27*	1.67
SPIKING	-	50.92	53.26	2.34*	2.01
	41.52	50.92	-	11.74*	2.01
	41.52	-	53.26	9.40*	2.01

*Significant

The multiple mean comparisons shown in Table II proved that there were significant differences exist between the adjusted means of (CAI) and CAI and traditional group, traditional and (CAI) group, traditional and (CAI)

traditional as the mean difference were greater than the obtained confidence interval 1.67. Comparing the means of the three groups, the experimental group – III (combined group) was found better in improving the setting than the experimental groups – I (traditional) and experimental group – II (CAI).

The multiple mean comparisons shown in Table II proved that there were significant differences exist between the adjusted means of (CAI) and CAI and traditional group, traditional and (CAI) group, traditional and (CAI) traditional as the mean difference were greater than the obtained confidence interval 2.01. Comparing the means of the three groups, the experimental group – III (combined group) was found better at improving spiking than the experimental groups – I (traditional) and experimental group – II (CAI).

CONCLUSIONS

Within the limitations and delimitations set for the present study and considering the results obtained, the following conclusions were drawn.

1. The selected skills such as setting and spiking significantly improved by three experimental trainings namely the traditional, Computer Assisted Instruction and combined (CAI and traditional) among Volleyball players.
2. The combined training (CAI with traditional) was found to be better in improving the setting and spiking than the isolated Computer Assisted Instruction and traditional learning.

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