ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies

Comparison of Multimedia Computer Assisted Instruction, Traditional Instruction and Combined Instruction on Learning the Skills of Volleyball

Dr. S. Sethu

Assistant Professor, Department of Physical Education and Sports, Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India.

Received 26th August 2014, Accepted 29th September 2014

Abstract

The purpose of the study was to find out the effect of multimedia computer assisted instruction, traditional instruction and combined instruction on learning the skills of Volleyball. To achieve the purpose of the study 45 Volleyball men players were selected as subjects from Tirunelveli District, Tamilnadu, India at random. The selected participants were randomly (simple random sampling) assigned to one of three groups of fifteen (n=15) each, such as Multimedia computer assisted, traditional and combined instruction groups. The training period was restricted to twelve week and the number of sessions per week was confined to three days. Their age ranged from 17 to 21 years. The multimedia computer assisted group received teaching methods through computer programmes such as video shows, clippings, and so forth for skills in Volleyball, where as Traditional Instruction group received a 50minutes lecture/ demonstration covering the same instructional content and the combined group received both instructions. Student's pre and post-test for skill performance were taken. The experiment existed for the duration of twelve weeks and the number of sessions per week was confined to three alternative days, in addition to the regular schedule of the curriculum. Passing and serving were selected as dependent variables and it was tested by using Russel-Lange Volleyball Test. The collected data were statistically analysed by using descriptive analysis, paired sample't' test, univariate tests, the pair wise comparisons. There was a significant improvement on passing and serving of Volleyball players due to the effect of multimedia computer assisted instruction programme, traditional instruction programme and combined instruction programme. It also concluded that, there was a significant difference on improving passing and serving of Volleyball players among the three groups such as multimedia computer assisted instruction, traditional instruction and combined instruction programmes.

Keywords: Multimedia, Traditional, Volleyball, Skills.

Introduction

The use of technology to enhance coaching and performance has been recognized as an important and effective undertaking (Katz, 2001). However, many of the available tools are not oriented toward the coaches who will be using the technology. Focusing on the user's needs and tasks is not a new idea. "Know the user" was the first principle in Hansen's (1971) list of design engineering principles (Shneiderman, 1987). Developments that focused mainly on the technology or the machine itself, rather than on the needs and the tasks of the end-users have been criticized by many researchers. In Norman's (1998) words: "We need to reverse the machine-centered point of view and turn it into a person-centered point of view. Norman (1998) also pointed out that an inappropriate 'machine-centered' approach might result in frustration and inefficiency for the end-users. Fischer (1998) agrees, and points out that the adoption of a machine-centered approach is responsible for the perception that computers are 'unfriendly', 'uncooperative', and time consuming.

Correspondence
Dr.S.Sethu,
E-mail: drsksethu@gmail.com, Ph. +9194434 61487

Methodology

The purpose of the study was to find out the effect of multimedia computer assisted instruction, traditional instruction and combined instruction on learning the skills of Volleyball. To achieve the purpose of the study 45 Volleyball men players were selected as subjects from Tirunelveli District, Tamilnadu, India at random. The selected participants were randomly (simple random sampling) assigned to one of three groups of fifteen (n=15) each, such as Multimedia computer assisted, traditional and combined instruction groups. The training period was restricted to twelve week and the number of sessions per week was confined to three days. Their age ranged from 17 to 21 years. The multimedia computer assisted group received teaching methods through computer programmes such as video shows, clippings, and so forth for skills in Volleyball, where as Traditional Instruction group received a 50minutes lecture/ demonstration covering the same instructional content and the combined group received both

instructions. Student's pre and post-test for skill performance were taken. The experiment existed for the duration of twelve weeks and the number of sessions per week was confined to three alternative days, in addition to the regular schedule of the curriculum. Passing and serving were selected as dependent variables and it was tested by using Russel-Lange Volleyball Test. The collected data were statistically analysed by using descriptive analysis, paired sample't' test, univariate tests, the pair wise comparisons.

Results

Table I. Mean, standard deviation and dependent 't' test values on passing and serving of experimental and control groups

Variables	Tests	MACIG		TIG		CIG	
		Mean	SD	Mean	SD	Mean	SD
Passing	Pre test	19.07	1.71	19.20	1.90	19.60	1.24
	Post test	23.00	2.30	25.33	2.09	28.80	2.18
	T-Test	**21.65***		**37.12***		**17.45***	
Serving	Pre test	25.13	1.60	25.27	1.49	26.00	1.07
	Post test	30.00	3.40	32.47	3.07	35.87	2.92
	T-Test	**9.81***		**16.42***		**16.88***	

*Significant at .05 level. The Table Value required at .05 level with df 14 is 2.14

Table II. Results of analysis of covariance on passing and serving among experimental and control groups

Adjusted Post Test Means			Sources of Variance	Sum of Square	df	Mean Squares	F-ratio
MACIG	TIG	CIG					
23.24	25.43	28.46	Between	202.53	2	101.27	58.88*
			Within	70.37	41	1.72	
30.67	32.87	34.80	Between	119.98	2	59.99	30.92*
			Within	79.59	41	1.94	

*Significant at .05 level. The Table value required at .05 level with df 2 & 41 is 3.23.

Table III. Scheffe's test for the differences between the adjusted post test paired means of passing and serving

Adjusted Post Test Mean			Mean Differences	Confidence Interval
MACIG	TIG	CIG		
23.24	25.43		2.19*	1.22
23.24		28.46	5.22*	
	25.43	28.46	3.03*	
30.67	32.87		2.20*	1.29

30.67		34.80	4.13*	
	32.87	34.80	1.93*	

*Significant at .05 level.

Table I indicated that multimedia computer assisted instruction, traditional instruction and combined instruction groups had effects on participants' passing and serving ability in Volleyball. Table II indicated that there was significant difference among the adjusted post-test means multimedia computer assisted instruction, traditional instruction and combined instruction groups on passing and serving. To find out which of the three paired means had a significant difference, the Scheffe's post-hoc test was applied. Table III indicated that, there was a significant difference on passing and serving between multimedia computer assisted instruction and traditional instruction groups; multimedia computer assisted instruction and combined instruction groups; traditional instruction and combined instruction groups. Hence it was concluded that, combined instruction group (Multimedia and traditional) is better than traditional instruction and multimedia computer assisted instruction groups in improving passing and serving ability of Volleyball players. It was also concluded that traditional instruction group is better than multimedia computer assisted instruction group in improving passing and serving ability of Volleyball players.

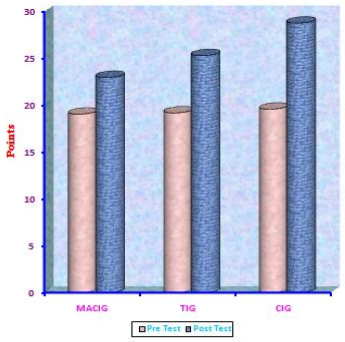

FIGURE I : PRE AND POST TEST MEAN VALUES OF MULTIMEDIA COMPUTER ASSISTED INSTRUCTION, TRADITIONAL INSTRUCTION AND COMBINED INSTRUCTION GROUPS ON PASSING.

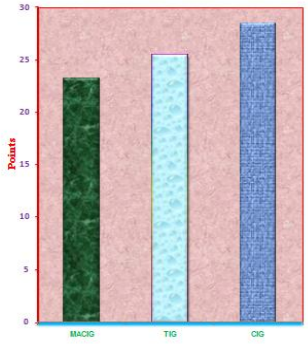

FIGURE II : ADJUSTED POST TEST MEAN VALUES OF MULTIMEDIA COMPUTER ASSISTED INSTRUCTION, TRADITIONAL INSTRUCTION AND COMBINED INSTRUCTION GROUPS ON PASSING.

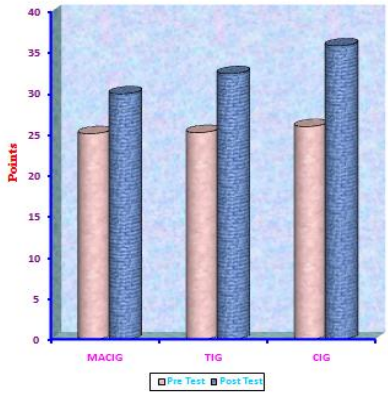

FIGURE III : PRE AND POST TEST MEAN VALUES OF MULTIMEDIA COMPUTER ASSISTED INSTRUCTION, TRADITIONAL INSTRUCTION AND COMBINED INSTRUCTION GROUPS ON SERVING.

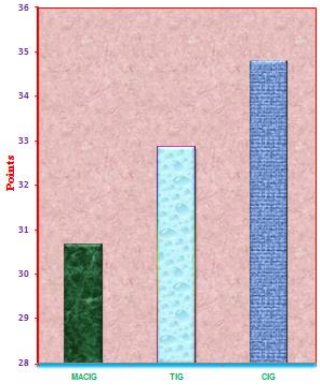

FIGURE IV : ADJUSTED POST TEST MEAN VALUES OF MULTIMEDIA COMPUTER ASSISTED INSTRUCTION, TRADITIONAL INSTRUCTION AND COMBINED INSTRUCTION GROUPS ON SERVING.

Discussion

The present study was designed to examine differences that may occur when individuals learn a motor skill under different instructional teaching methods and replicated previous findings by showing differential performance dependent on teaching methods. With regard to the knowledge and skill test, all groups improved their cognitive learning and skill development in passing and serving skill in Volleyball, after instruction. Post-test results indicated significant differences between the groups concerning the volleyball skill. Nevertheless, the mean skill test scores of the CI group were significantly greater than MCAI and TI groups. Retention test results showed that groups

retained the knowledge and skill learning. However, the mean skill test score of the MCAI group was significantly lower than the TI and CI groups.

Comparison to the literature

The results from this study were parallel with the results reported in the literature. Some evidence suggests that the TI method is superior to the MCAI method while other evidence is contradictory. From a recent multimedia study on learning rule violations in basketball, Antoniou et al. (2003) found that university physical education students receiving lecture instruction performed significantly better than the MCAI group. In International Journal of Computer Science in Sport – Volume 2/Edition 1 www.iacss.org other literature reported, the MCAI method was found to be superior. Siskos, Antoniou, Papaioannou, and Laparidis (2005) found that MCAI was superior to traditional classroom teaching in the transmission of health-related fitness and nutrition knowledge. Also, others report no significant differences in a comparison of testing results between TI and MCAI methods. Vernadakis, Zetou, Avgerinos, Giannousi and Kioumourtzoglou (2006) compared three different instructional methods by means of the skill test scores, obtained from three groups of middle school students. The tests assessed the learning of the setting skill in volleyball. They reported equal improvement in learning with TI, MCAI and CI method. Furthermore, they conluded that the combined method of instruction tended to be the most effective for skill development. In earlier studies comparing the impact of MCAI and TI method, Adams, et al. (1991) and Kerns (1989) found no significant differences in scores of tests in golf and tennis rules.

Consequences for future research

In conclusion, multimedia programs can be utilized to enhance the effectiveness of teaching strategies or techniques in physical education classes. Computers can be used for the teaching of the cognitive aspects of sports such as rules and scoring procedures, and to allow teachers to have more time to spend with students' motor skills. However, these conclusions are limited for students aged 17 – 21 years old. More studies should be conducted to investigate the effect of MCAI in different ages and for various sport activities. Also, it is critical to continue researching into how students learn in different technological environments, since the researchers have only begun to explore the uses and practicality of MCAI.

Conclusions

1. There was a significant improvement on passing and serving of Volleyball players due to the effect of multimedia computer assisted instruction programme.
2. There was a significant improvement on passing and serving of Volleyball players due to the effect of traditional instruction programme.
3. There was a significant improvement on passing and serving of Volleyball players due to the effect of combined instruction programme.
4. There was a significant difference on improving passing and serving of Volleyball players among the three groups such as multimedia computer assisted instruction, traditional instruction and combined instruction programmes.

References

1. Adams, T., Kandt, G., Throgmartin, D., & Waldrop, P. (1991). Computer – Assisted Instruction vs Lecture Methods in Teaching the Rules of Golf. *Physical Educator, 48*(3), 146-150.
2. Antoniou, P., Derri, V., Kioumourtzoglou, E., & Mouroutsos, S. (2003). Applying Multimedia Computer-Assisted Instruction to enhance Physical Education Students' Knowledge of Basketball Rules. *European Journal of Physical Education, 8*(1), 78-90.
3. Fischer, G. (1998). Beyond 'Couch Potatoes': From consumers to designers. Proceedings of the 3rd Asia Pacific Computer Human Interaction Conference, IEEE Computer Society, 1998; p. 2-9. [On-line] Available http://www.cs.colorado.edu/~gerhard/papers/apchi-98.pdf
4. Hansen, W., J. (1971). User Engineering Principles for Interactive Systems. Proceedings of the Fall Joint Computer Conference, 39. New Jersey: AFIPS Press, Montvale. p: 523-532. Reported in Shneiderman, B. (1987). Designing the User Interface: Strategies for Effective Human-Computer Interaction. Reading, MA: Addison-Wesley Publishing Company.
5. Katz. L. (2001). Innovations in Sport Technology: Implications for the Future. The Proceedings of the 11th congress of the International Association for Sport Information, Lausanne, Switzerland.
6. Kerns, M. (1989). The effectiveness of Computer-Assisted Instruction in Teaching Tennis Rules and Strategies. *Journal of Teaching in Physical Education, 8*(2), 123-130.
7. Norman, D. A. (1998). The Invisible Computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and Information Appliances Are the Solution. Cambridge, MA: MIT Press.
8. Shneiderman, B. (1987). Designing the user interface: Strategies for Effective Human-Computer Interaction. Reading, MA: Addison-Wesley Publishing Company.
9. Siskos, A., Antoniou, P., Papaioannou, A., & Laparidis K. (2005). Effects of Multimedia Computer-Assisted Instruction (Mcai) on Academic Achievement in Physical Education of Greek Primary Students. *Interactive Educational Multimedia, 10*, 61-77.

10. Vernadakis, N., Zetou, E., Avgerinos, A., Giannousi, M. & Kioumourtzoglou, E. (2006). The Effects of Multimedia Computer-Assisted Instruction on Middle School Students Volleyball Performance. In E. Moritz, & S. Haake (eds.) Proceedings of the 6th International Conference of Sports Engineering Association, Munich, Germany, vol. , pp. 221-226
11. Wiemeyer, J. (2003). Learning with Multimedia - More Promise than Practice? *International Journal of Computer Science in Sport*, *2*(1), 102-116.