



EFFECT OF INTERACTIVE MULTIMEDIA (IMM) ON TEACHING BASIC ANATOMY IN PHYSICAL EDUCATION

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ABSTRACT

Computer technology has become an integral part of physical education, yet there have been few studies exploring the use of multimedia technology in the instruction of Physical Education. Any discussion on multimedia without highlighting the current use of computers will be incomplete. Interactive Multimedia (IMM) is a relatively new educational innovation in primary, secondary and tertiary level classroom teaching. Interactive multimedia combines computer hardware, software, and peripheral equipment to provide a rich mixture of text, graphics, sound, animation, full-motion video, data, and other information. The purpose of the present study was to investigate the effect of Interactive Multimedia (IMM) on teaching Basic Anatomy among Bachelor degree students. In this study, forty students studying Bachelor's degree course in Physical Education, in the Department of Physical Education and Sports Sciences, Annamalai University were randomly selected and their ages were ranged from 18 to 20 years (mean age = 19 ± 0.5 yrs). They were divided into two equal groups ($n=20$), each namely the traditional method of teaching group (TMT) and interactive multimedia based modular of teaching group (IMM) both emphasizing on teaching Basic Anatomy. The IMM group was taught Basic Anatomy through computer assisted instruction programme for a period of 40 working days at the rate of one hour per day. The traditional lecture methods were adopted among the TMT group by regular teachers in the normal class hours. To assess the learning ability of the selected students, achievement test was designed that consists of 100 questions. Out of 100 questions, 60 objective type questions and 40 fill in the blanks type questions were designed. The total score of the test was 100 marks. For each correct answer, the score was one and for each wrong answer the score was zero. To investigate the effectiveness of TMT and IMM on teaching Basic Anatomy, Independent 't' test was employed. The result revealed that there was a significant difference between traditional method of teaching group (TMT) and interactive multimedia based modular of teaching group (IMM) in teaching the Basic Anatomy among the selected Physical Education students. It was observed that the IMM group scored (70.25 ± 2.998) better marks than the TMT group (50.75 ± 2.89).

Key Words: Interactive Multimedia, Traditional Method of Teaching, Basic Anatomy

INTRODUCTION

Computer technology has become an integral part of physical education, yet there have been few studies exploring the use of multimedia technology in the instruction of Physical Education. Multimedia includes High Technology Instructional Media (Pillai and Mohan, 1983). Moreover, computer-assisted education could assist students in their preparation to enter and compete in a modern, global workforce (Oppenheimer, 1997). Any discussion on multimedia without highlighting the current use of computers will be incomplete. The decreasing cost and increasing availability of micro-computers in schools have led researchers as well as teachers to become more interested in Computer Assisted Instruction (Pillai and Mohan, 1988).

Interactive Multimedia (IMM) is a relatively new educational innovation in primary, secondary and tertiary level classrooms (Herrington & Oliver, 1997). Viewed by Halal and Liebowitz (1994) as the technological key to future education, multimedia is defined as a powerful combination of earlier technologies that constitutes an extraordinary advance in the capability of machines to assist the educational process. Interactive multimedia combines computer hardware, software, and peripheral equipment to provide a rich mixture of text, graphics, sound, animation, full-motion video, data, and other information. Module is a self contained, suitably tested, auto instructional material. Modular approach provides a strategy for the teacher and the learner to mutually share the responsibility for learning. The teacher becomes a facilitator of learning, rather than the traditional way. A module is a self-contained and self-instructional material. It is self-contained in the sense that everything is self-explanatory. It is a self-instructional package because each module has a set objectives and it fulfils in developing the expected skills in the learner. Since it is an individualized instructional material, the learner can take his own time to complete the material. It is not time but achievement that is the criterion in a module (Chu and Chen, 2000).

Further, Data in 1995 suggest that 20 to 30 percent of instructors are using some form of instructional technology in higher education course delivery. Instructional technology will continue to play a major role in higher education during the next century. As the new century approaches, physical educators (Kinesiologists, Exercise Scientists,

etc.) must prepare their students in a multi-dimensional way by adopting sophisticated technology in their lifelong pursuit of learning (Goggin, Online sources). Since most of the salient features of modularization are incorporated in Computer Assisted Instruction (CAI) programme, CAI software developed as an integral part of multimedia based modules will, no doubt, facilitate the auto learning of slow learners. The purpose of the present study was to investigate the effect of Interactive Multimedia (IMM) on teaching Basic Anatomy for bachelor degree students.

METHODOLOGY

In this study, forty students studying bachelor's degree in the Department of Physical Education and Sports Sciences, Annamalai University were randomly selected and their ages were ranged from 18 to 20 years (mean age = 19 ± 0.5 yrs). They were divided in to two groups, each namely the Traditional Method of Teaching group (TMT) and Interactive Multimedia Based Modular of Teaching group (IMM) both emphasizing on teaching Basic Anatomy. A computer expert was consulted for this purpose and it was discussed with him how to use the software based instructions. Though there are various programmes such as "drill and practice programme", the "tutorial programme" was used to designed, since this is the most widely used type of computer programme. In this selected design, the repetition of a format in which the computer presents an exercise, the student types in a response and the computer informs the student if the answer is correct. Diagrams and sketches were also incorporated in the software in appropriate places. For subjects and units, different codes were allotted.

The IMM group was taught through computer assisted instruction programme on for a period of 40 working days at the rate of one hour per day. The students were taught by using computers with multimedia software. Three units were covered the period of investigation. The traditional lecture methods were adopted among the TMT group by regular teachers in the normal class hours. At the end of the experimental period, an achievement test was conducted to the learners of the IMM group and the TMT group. To assess the learning ability of the selected students, achievement test was designed that consists of 100 questions, out of which, 60 objective type questions and 40 fill in the blanks type questions were designed. The total score of the test was 100 marks. For each

correct answer, the score was one and for each wrong answer the score was zero. The independent 't' ratio was used to find out the significant differences, if any between Traditional Method of Teaching group (TMT) and Interactive Multimedia Based Modular of Teaching group (IMM) in teaching Basic Anatomy. In all cases, .05 level of confidence was fixed to test the significance.

RESULTS AND DISCUSSIONS

Table – I shows that the Result shows the mean and standard deviation values of Interactive Multimedia Based Modular of Teaching group (IMM) and Traditional Method of Teaching group (TMT) on Achievement Test were 70.25 (\pm 2.998) and 50.75 (\pm 2.89) respectively.

Table – I

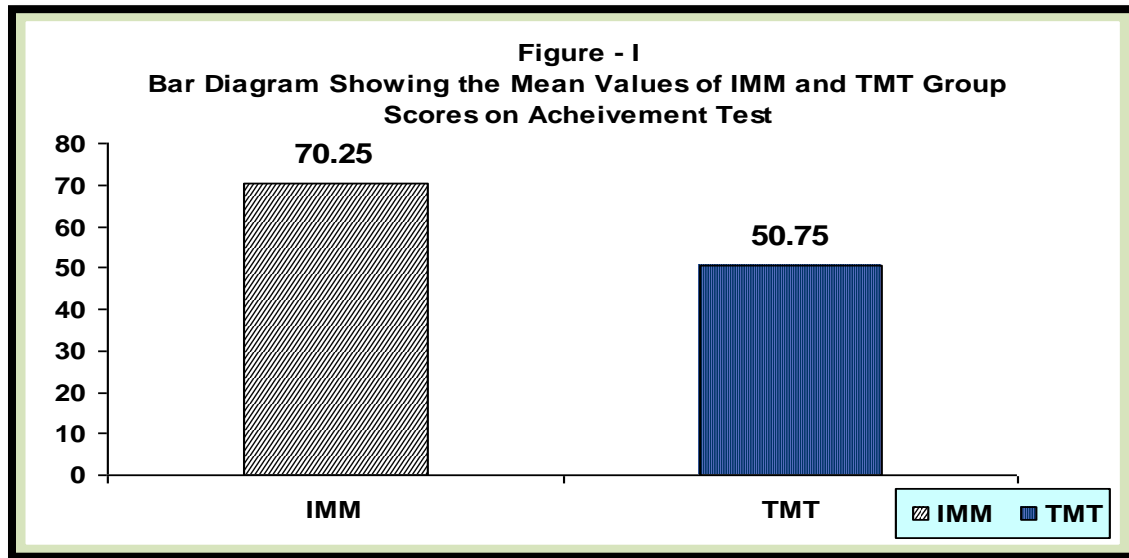
The Mean, Standard Deviation and 't' Ratio Value of Interactive Multimedia Based Modular of Teaching group (IMM) and Traditional Method of Teaching group (TMT) in Teaching Basic Anatomy on Achievement Test

Groups	Mean	SD	't' –ratio
IMM	70.25	2.998	20.61*
TMT	50.75	2.89	

* Significant at 0.05 level ($p < 0.05$, $t(1, 38) = 2.025$)

The obtained 't' ratio value (20.61) was greater than the required table value 2.025 for significance at .05 level of confidence with degrees of freedom 38. The result of the study revealed that there was a significant difference between Interactive Multimedia Based Modular of Teaching group (IMM) and Traditional Method of Teaching group (TMT) in teaching Basic Anatomy on Achievement Test. From this experimental study, it was concluded that there was a significant improvement of Interactive Multimedia Based Modular of Teaching group (IMM) in teaching Basic Anatomy among the Bachelor's degree Physical Education Students. This effect is due to the fact that there are some positive educational implications associated with using Interactive Multimedia in teaching processes, like the availability of greater variety of

learning resources; improved opportunities for individualities learning; the possibilities of greater control for students over their learning; more extensive coverage via technologies and therefore greater access to them; greater flexibility offered by the wide range of technologies; characteristic fall in the cost of new technologies as they become established; and there is a higher degree of interactivity as convergence occurs between old and new technologies.



Multimedia can be considered a special kind of software. The main scope of Multimedia is to ensure high quality of software with reduced costs and time that meets the requirements of the target groups (e.g., portability, reliability, maintainability, usability, reusability and design) by structuring the developmental process into specific phases, cascades or cycles, e.g., inception, elaboration, construction and transition with several core workflows or problem analysis, definition of requirements, sketch, specifying the interface, implementation, integration and verification, installation, validation and documentation and modification, expansion and corrections. By and large, the findings of the study yields the similar results of Postlethwart *et al.*, (1964), Nishino and Alankoki (1994), Schram (1965), Antonisamy (1989), Bhatt (1992), Kalimuthu (1991) and George (1966).

CONCLUSIONS

There was a significant improvement on traditional method of teaching group (TMT) and interactive multimedia based modular of teaching group (IMM) in teaching the Basic Anatomy among the selected Physical Education students.

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