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The Multimedia Approach in Teaching Physical Fitness as Basis for Physical Education Program

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ABSTRACT

Innovations and technological advances in transmitting information play a vital role in the educational system. This experimental research, employing the pretest-posttest design, determined the influence of multimedia in the physical fitness status of students using Zumba video compact disc. A time-series using two groups, the experimental and the control with 30 participants each group from Bachelor in Industrial Education of Capiz State University, Philippines which were selected through random sampling. A descriptive survey was also employed to determine students' perception towards their exposure to the multimedia Zumba exercise. Data were computed getting the mean scores using the standardized Philippine Physical Fitness Tests. Statistical tools employed to analyze results were descriptive data, frequency, percentage, mean, standard deviation and t-test with 0.05 level of significance. Pre and post results of both groups differ significantly in the muscular strength, flexibility, body composition and cardiovascular endurance. The experimental group perceived that their exposure to the multimedia Zumba exercise developed their knowledge, skills, values and creativity. It is also evident in the result that multimedia teaching approach greatly influenced the effectiveness of the teaching-learning process.

Keywords – Physical Education, Multimedia Approach, Experimental Design, Capiz, Philippines

INTRODUCTION

Various researches underscore the concerns that a mismatch exists between the quality of education provided by higher education institutions and the skills competency required by the industry. In fact, Teo and Wong (2000) found that graduates lack creative, communication, analytical and critical thinking, and problem-solving skills necessary to survive and flourish in the professional world. Thus, it is necessary that colleges and universities emphasize on training future graduates to fit in the demands of the industry. Thus, the application of multimedia in education is necessary now more than ever. Multimedia is defined as the use of different media types (texts, images, audio, and video) into an incorporated multi-sensory interactive application or presentation to send out messages or inform the audience of the intended or desired outcome. Agnew, et al., (1996) explains that multimedia technology aims at empowering individuals into "using computers to interact with information that is represented in several media, by repeatedly selecting what to see and hear next."

Integrating multimedia elements and approaches in education strengthens the learning outcome. Vaughan (1998) asserts that the power of multimedia is in its multi-sensory effects, encouraging students to become interactive and be able to control the content and flow of information. Eventually, multimedia transforms learners as individuals who are highly involved at work (Neo & Neo, 2000), with developed learning process as active learners.

FRAMEWORK

The study is anchored on the Multimedia Approach to Teaching, which uses an integrated format of audio- video and animation applications to create a multi-sensory teaching and learning situation (Garo, 2004). The approach is based on the premise that teaching and learning are more effective if more senses are involved. According to Bandura (2006), environmental stimuli affect behavior. As a social learning theorist, people learn from observing others or through models using the multi-media which they imitate the dance steps through models on television.

OBJECTIVES OF THE STUDY

The study aimed to determine: (1) the pre and post physical fitness status of the two groups in terms of muscular strength and endurance, flexibility, body composition and cardiovascular endurance; (2) the significant difference between the pre and post physical fitness of the two groups in terms of muscular strength and endurance, flexibility, body composition and cardiovascular endurance ; (3) the highly developed fitness characteristics of the experimental group after two weeks, four weeks and six weeks ; (4) the significant difference of the physical fitness status between the two groups in terms of muscular strength and endurance, flexibility, body composition and cardiovascular endurance after two weeks, four weeks and six weeks ; (5) the significant difference in the physical fitness characteristics when students classified as to age, sex and exposure to physical activities and (6) perception of the experimental group towards the exposure to multimedia zumba exercise.

MATERIALS AND METHODS

The researcher used the pretest-posttest design to determine the effects of multimedia to the physical fitness status. A time-series using two groups the experimental and the control. There were 60 students from the Bachelor in Industrial Technology, Capiz State University, with 30 in each group selected through random sampling employing fishbowl technique. The experimental group used the multimedia teaching approach while the control group was taught using the conventional way of teaching. The data needed for age ,sex, and exposure to physical activities of the students of both groups were gathered using the Philippine Physical Fitness Test retrieval form. The test was conducted before the experiment, after two weeks, four weeks and six weeks to both groups. Students in the Experimental group were interviewed on their perception towards the multimedia teaching approach. Statistical tools employed to analyze results were descriptive data, frequency, percentage, mean, standard deviation and t-test with the level of significance set at alpha 0.05.

RESULTS AND DISCUSSION

Data in Table 1 show that both groups were comparable at the start of the experiment. They obtained the same descriptions as follows: muscular strength

and endurance below average; low flexibility; normal body composition and good cardio-vascular endurance. Generally, data show that the two groups had almost similar experiences in physical fitness status. When students were interviewed, the researchers found out that the students' experiences and physical activities were almost similar when they were in elementary and high school levels.

Table 1. Pre experiment physical fitness status of students in two groups

	Experimental Group			Control Group		
Variables	N	M	Description	N	M	Description
MSE	30	10.91	Below Average	30	11.23	Below Average
Flexibility	30	8.75	Low Fitness	30	8.96	Low Fitness
Body Composition	30	19.95	Normal Fitness	30	19.39	Normal Fitness
CVE	30	90.1	Good	30	93.96	Good

Legend: MSE - Muscular strength
CVE - Cardiovascular endurance

Data in Table 2 reveal that regarding muscular strength and endurance, the experimental group was average while the control group was below average. The results imply that the amount of efforts exerted by the experimental group during the activity influenced the students' MSE. In flexibility, the experimental group was marginal, while the control group was low fitness, but in body composition both groups were in the normal range. Among the four parameters taken into account, the status of cardiovascular endurance was excellent in the experimental and good in the control group. The study of Sarapanan (2008) support this study with the claim that multimedia used in learning process elicited high rate of performance.

Table 2. Post Experimental Physical Fitness Status of Students in the Experimental Group and Control Group

	Experimental Group			Control Group		
Variables	N	M	Description	N	M	Description
MSE	30	19.96	Average	30	14.26	Below Average
Flexibility	30	11.63	Marginal	30	9.8	Low Fitness

Body Composition	30	19.63	Normal Fitness	30	19.23	Normal Fitness
CVE	30	77.46	Excellent	30	92.06	Good
Legend:	MSE - Muscular strength CVE - Cardiovascular endurance					

Data in Table 3 show significant differences between the pre- test and post-test of the students' MSE, flexibility, body composition and CVE in the experimental. The result implied better and greater improvement after the six weeks intervention using multimedia teaching approach. The findings go with the results of the study Sarapanan (2008) which revealed that multimedia used in learning processes elicit high rate of performance.

Table 3. Difference in the Pre Test and Post Test Scores of the Experimental Group

Variables	N	Mean	t-Value	Sig. 2-tailed	Probability
Muscular strength and endurance					
Prettest	30	10.96	7.563	0.000	S
Posttest	30	19.96			
Flexibility					
Prettest	30	8.75	6.523	0.000	S
Posttest	30	11.63			
Body Composition					
Prettest	30	19.95	2.293	0.029	S
Posttest	30	19.63			
Cardiovascular Endurance					
Prettest	30	90.1	5.449	0.000	S
Posttest	30	77.46			
Legend:	S=Significant at 0.05 Alpha				

Among the four physical fitness statuses of students, muscular strength, flexibility, and body composition and endurance of the experimental group saw slight improvement after two weeks. It was also observed that CVE was highly developed after two weeks, five weeks, and six weeks. Similar results reveal in

the study of Pimentel (2007), which determined the effects of computer assisted approaches in teaching chemistry. This findings imply that the training helped developed the students' CVE. Likewise, it was noticed that there was a marked change of the difference between the experimental group and control in the students' physical fitness status as follows: muscular strength and endurance from below average to average; flexibility, low average to marginal; and cardiovascular endurance from good to excellent. Body composition status remained the same.

Table 4. Highly Physical Fitness Status

Variables	Two Weeks		Four Weeks		Six Weeks	
	Mean	Description	Mean	Description	Mean	Description
Muscular Strength and Endurance						
Experimental	12.23	Below Average	13.36	Below Average	19.96	Average
Control	11.43	Below Average	12.93	Below Average	14.26	Below Average
Flexibility						
Experimental	9.67	Low Average	10.49	Low Average	11.63	Marginal
Control	9.48	Low Average	9.95	Low Average	9.8	Low Average
Body Composition						
Experimental	19.92	Normal	19.74	Normal	19.63	Normal
Control	19.6	Normal	19.41	Normal	19.23	Normal
Cardiovascular Endurance						
Experimental	84.06	Good Average	77.13	Excellent	77.46	Excellent
Control	91.93	Good Average	89.5	Good Average	92.06	Good Average

No significant differences were noted after two weeks and four weeks between the phy-sical fitness status of the experimental and control groups, particularly on muscular strength and endurance, flexibility and body composition. However, there exists significant difference in cardiovascular endurance. After six weeks there were significant differences between the experimental and control groups' physical fitness status; namely in muscular strength and endurance, flexibility and cardiovascular endurance but no significant difference was found in body composition. The result indicates that a majority of the physical fitness status improved after an intervention of six weeks such span of time is favorable to develop the physical fitness characteristics using the multimedia teaching approach. The studies of Neo and Neo (2001), Vaughan (1998), Agnew, et al. (1996), Roblyer

& Edwards (2000), and Jonassen, et. al, (1999) explicate classroom application of multimedia technologies facilitate students in utilizing knowledge into more meaningful ways. They learn better since their multiple sensories are heightened, making them more motivated, attentive and retain the information presented to them (Neo and Neo, 2001).

Table 5. Significant Difference in the Physical Fitness Status of the Students in the Experimental and Control Groups in Terms of Muscular Strength and Endurance, Flexibility, Body Composition, and Cardiovascular Endurance

	Two Weeks				Four Weeks				Six Weeks			
Variables	Mean	t-value	Sig. 2-tailed	Prob-abil-ity	Mean	t-value	Sig. 2-tailed	Prob-ability	Mean	t-value	Sig. 2-tailed	Prob-ability
Muscular strength and endurance												
Experimental	12.23	0.746	0.459	NS	13.36	0.382	0.718	NS	19.96	3.367	0.001	S
Control Group	11.43			12.93				14.26				
Flexibility												
Experimental	9.67	0.278	0.782	NS	10.49	0.737	0.782	NS	11.63	2.786	0.007	S
Control Group	9.48			9.95				9.8				
Cardiovascular Endurance												
Experimental	84.06	0.008	0.008	S	77.13	4.532	0.000	S	77.46	5.031	0.000	S
Control Group	91.93			89.5				92.06				

There are no significant differences in physical fitness status of the experimental group and control group when muscular strength and endurance, body composition and cardiovascular endurance are considered according to age. However, there is a significant difference in flexibility. The result indicates that age does not affect the progress of physical fitness status of the students. Regarding sex, data revealed that there were significant differences between male and female students, muscular strength and endurance, and flexibility in favor for the male students.

On the contrary, no significant differences were found in body composition and cardiovascular endurance. This means that males progress better than females in muscular strength and endurance and flexibility only when they were taught rhythmic activity using multimedia approach. Regarding exposure to physical activities there were no significant differences in the experimental group and control physical fitness status; namely, flexibility, body composition and cardiovascular endurance except in muscular strength and endurance of the participant and

the spectators when they were classified according to exposure to physical activities. The result implies that the said exposure did not affect the students' physical fitness characteristics using the multimedia approach in teaching. Findings of the study also go in cognizance with the results of the study of Joshi (2012), who said that multimedia instruction gives students with more opportunities to express ideas without feeling bored in the course. This in turn motivates students to stay positive in their view of the lessons, thus, improving their skills (Kasper, 1997).

Table 6. Difference in the Physical Fitness Status of Students When Classified According to Age

Variables	Mean	t-Value	Sig. 1-tailed	Probability
Flexibility				
Young	6.57	3.176	0.034	S
Old	9.86			

Table 7. Difference in the Physical Fitness Status of Students When Classified According to Sex

Variables	Mean	t-Value	Sig. 1-Tailed	Probability
Muscular Strength				
Male	12.5	2.625	0.011	S
Female	9.7			
Flexibility				
Male	9.45	2.59	0.012	S
Female	8.23			

Table 8. Difference in the Physical Fitness Status of Students When Classified According to Exposure to Physical Activities.

Variables	Mean	t-Value	Sig. 1-tailed	Probability
Muscular Strength and Endurance				
Participants	9.6			
Spectators	12.02	2.167	0.034	S
Spectators	90.94			

Table 9 shows the students' perceptions towards their exposure to multimedia teaching approach, students claimed that: (1) Zumba dancing exercise facilitated

learning and enhance their knowledge and skills, (2) Zumba enables them to create appropriate expressive dance steps as influenced by television, (3) Disclosed that they were encouraged to learn the figures independently as they perform the fundamental steps.

Finally, they claimed that the knowledge, skills, values and creativity they acquired through multimedia approach can contribute to the enrichment of their skills for the productive life.

Table 9. Perception of the Experimental Group Towards their Exposure to Multimedia

Knowledge	Skills	Values	Creativity
Learning to identify basic steps in Dancing.	Perform steps correctly and with proficiency.	Perform the dance with satisfaction	Crete dance steps combination
Acquire knowledge and understanding on the importance of ballroom dancing as a rich course for leisure time setting.	Improve grace, poise and flexibility	Appreciate the contribution of other countries in the development of Philippine culture.	Activate and improve artistic ability.
Develop cultural preservation in terms of beliefs and tradition.	Contribute to the development of fitness characteristics.	Find pleasure in performing the dance.	Create appropriate expressions and interpretations.
Interpret figures.	Develop optimum health and fitness.	Interpret with all ages	Encourage learning.
Learning through models.	Maximize capacity towards attainment of the goals of society.	Develop love, patience, humility, self-discipline, and self-direction.	Learn to innovate figures and create dance variations.
Comprehend and follow verbal instructions through multimedia.	Develop cognitive skills.	Contribute to the enrichment of life.	Execute the dance steps gracefully and accurately.
		Develop desirable social traits.	
Identify and correct execution of dance steps introduced.	Develop proper coordination.	Develop accuracy.	Create new dance steps and choreography.

CONCLUSIONS

The use of multi-media teaching approach helps develop skills and improve fitness status compared with the conventional way of teaching. This study illustrated that the multi-media zumba exercise used as the intervention associated in the development of physical fitness status of the participants is effective.

There is strong evidence that the multimedia approach makes the teaching – learning process more effective. Therefore the researcher highly recommends the integration of multimedia approach in the different subject areas particularly in physical education. Teachers also have to consider the creativity and innovativeness in making use of multimedia to facilitate the acquisition of knowledge and skills of the students.

TRANSLATIONAL RESEARCH

This study can give information about the effectivity of using multimedia in teaching Physical Education Program. Results of this study could be translated into manuals after the approval of Intellectual Property Rights Office of the University. Teachers handling PE subjects could utilize the information gained from this research in encouraging students to be acquainted and engaged in physical fitness activities even under indoor condition. The translated media could be evaluated for acceptability by the stakeholders involved.

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