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Investigating the difference between male and female pupils' skill concept acquisition and retention

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Abstract

The purpose of this study was to investigate the difference between male and female pupils' skill concept acquisition and retention. The population was made up of one hundred and fifty class two pupils from five randomly sampled mixed public primary schools. A total of 30 pupils were selected using stratified technique as the sample size for the study. The data was collected using adapted knowledge test instrument of Vassiliki, Kyriaki, Oglia and Efthmus (2008). Participants were taken through pre-test, posttest and retention test on the overhand throwing and catching concepts by completing the knowledge test instrument. Residual scores were calculated by finding a regression of posttest on pre-test and retention test on pre-test. The results (predicted scores), were further subtracted from posttest and retention test to get residual acquisition and residual retention gains respectively. Independent t-test was used to examine the differences between male and female pupils' skill concepts acquisition and retention and also to test the null hypothesis set for the study at 0.05 significance level. The findings indicated no significant difference between males and females pupils' achievement in pre-test and posttest except for retention test. Based on the study results, the conclusions were that teachers should increase the work load for refinement and automation of skill for effective skill concept acquisition and retention.

Keywords: Skill, concept, acquisition, retention

1. Introduction

Just at a glance, many people have the perception that males are better than females in performing physical activity of most kinds. This perception seems to influence some teachers' content and pedagogical delivery during physical education lessons without enough empirical backing. Physical education according to Wuest and Bucher (2006) ^[2] is an educational process that uses physical activity as a means to help individual to acquire skills, fitness, knowledge and attitude that contribute to their optimal development and well-being. Acquisition of skills which are best developed in infants and young adults is the prime purpose of teaching physical education in schools worldwide (Naylor & McKay, 2009) ^[3].

The main worry of the researcher in the teaching of physical education at the basic schools in Ghana is the low acquisition and retention of motor skills culminating the decline in fitness level of young people and high drop-out rate in regular participation in physical activities (Hardson, 2008) ^[4]. Wuest and Bucher (2006) ^[2] stated that the likelihood of individuals engaging in physical activities regularly will increase if they have the skills to participate successfully in activities that are enjoyable and personally satisfying. Physical education as a subject forms an integral part of the general education without which there will be no total liberation of citizens in education, socio- economic and technological empowerment. Realizing the importance of physical education and physical activities in child development worldwide, it has been enshrined in the UNESCO (1978) ^[5] charter on physical education and sport that every human being has a fundamental right of access to physical education and sports which is essential for full development of one's personality. This implies that all pupils and students must be taught physical education irrespective of the colour, race, gender or ability.

Many professional physical education teachers in Ghana and others worldwide face great challenges in maximizing academic learning time-physical education –ALT-PE in their classes to enhance teaching effectiveness in order to improve motor skill acquisition and retention (Vassiliki, Kyriaki, Oglia & Efthiamus, 2007) ^[6]. They record low ALT-P E in their classes. Students find it difficult to systematically demonstrate how a skill is performed after learning.

As a result, many educationists, stakeholders, and students continue to question the quality of teaching physical education like other subjects in schools. It seemed to them that physical educators have failed to provide learners with the opportunities to develop concepts, skills, competencies, and confidence needed for effective participation in both

Intra-mural and extra-mural activities. Pufaa, (1998) [7] stressed that mental practice which is a symbol of rehearsal of a skill with absence of gross muscular movement is very important in skill concept acquisition and retention and this is enhanced by accurate explanation and demonstration. Williams (2001) [8] stressed that motor learning is internal, taking place within the athlete's central nervous system which cannot be observed directly. Pupils' learning time ultimately determines the performance of learning a task and therefore is a very critical factor that may influence learning (Rink, 1998) [9]. Children at adolescence stages experience different levels of ability in terms of task given to them to perform in various subjects' areas (Kahle, 2004). Teachers' attitude towards gender ability in class affects male and female pupils' skill concept acquisition and retention (Pangrazi, 2001 & Liu, 2006) [11, 12]. It explains that teachers who are not sensitive to gender equity specifically how they distribute their questions, feedback and other comments in mixed gender class, may affect pupils skill concept acquisition and retention. Similarly, Renold (2006) [13] stressed that in a society where boys fail to exhibit masculine ability according to societal expectations may be ridiculed. Payne and Isaac (2002) [14] reported on Thomas, Nelson and Church (1998) research on gender difference in performance between ages 6-18 in health related fitness components which include distance running, chin-up, sit-up sit and reach. The result was that males out performed females, except in sit and reach.

Despite the struggle of concerned educationists to improve the quality of teaching physical education in Basic Schools in Ghana, the skills concepts acquisition and retention of students as well as ALT-PE continues to record very low. It seems many students in Basic Schools do not have confidence to regularly participate in physical activities and sports for promotion of health, talent development and socialization due to inadequate fundamental skill concepts acquisition and retention in lower primary school.

1.1 Purpose of the Study

The purpose of this study was to investigate the differences between male and female pupils in skill concepts acquisition and retention for decision-making on effective teaching of physical education especially in basic schools of Ghana.

1.2 Hypotheses

- i. There will be no significant difference between male and female pupils' skill concepts acquisition and retention at pre-test.
- ii. There will be no significant difference between male and female pupils' skill concepts acquisition and retention at posttest.
- iii. There will be no significant difference between male and female pupils' skill concepts acquisition and retention at retention-test.

2. Methodology

Descriptive comparative research design was used in this study. It is descriptive because no treatment was given to participants. The pre-test posttest and retention test were aimed at finding out the difference that existed between male and

female pupils overarm throwing and catching in handball. The population of the study was made up of one hundred and fifty class two pupils selected from five mixed public schools in Senya Beraku Circuit of Awutu Senya District in Central Region. Stratified random sampling technique was used to select 3 boys and 3 girls from each of the five selected primary schools for the study. All the pupils in the selected classes participated in the study. During analysis, the knowledge test results of three males and three females from each class across pre-test, post-test and retention test were used. This was done in order to get full representation of participants for generalization of the study results.

2.1 Instrumentation

Adapted knowledge test instrument used by Vassiliki, Kyriaki, Oglia and Efthimus (2008) [1] was used with local based pictures of throwing and catching for this study. Part one of the knowledge test required the pupils to match each skill word throwing and catching to the list of five manipulative pictures. The part two of the knowledge test required the pupils to circle the correct picture of throwing and catching in a list of five different forms of catching. This knowledge test was administered during pre-test, posttest and retention test.

Pupils were taken through the over arm throwing and catching based on their allocated time on the time table for 30 minutes every week for 4 weeks. The post test was conducted just after the lesson and retention test 10 days later using the same knowledge test. All class members participated but only the results of the selected pupils was used in the analysis using t-test at $p < .05$ alpha level of significance.

3. Results and Discussion

Table 1: Difference between Males and Females Pupils Pre-test on Skill Concepts Acquisition and Retention

Pre-test	Groups	N	Mean	SD	T	Df	P value
	Male	15	1.06	.802	.000	34	1.000
	Female	15	1.06	.873	.000		

$\alpha = .05, p > 0.05$

Table 1 shows that a t-value of 0.00 was obtained which was insignificant at a p-value of 1.00. Since the p-value is greater than the alpha level of 0.05, the null hypothesis which states that there will be no significant difference between male and female pupils' skill concepts acquisition and retention at pre-test was upheld. Therefore, there was no difference between male and female pupils' skill concept acquisition and retention at pre-test.

This result opposed the results that gender differences in terms of performance exist between early adolescence stage and adolescence stage (Kahle, 2004 & Payne & Isaac, 2002) [10, 14]. The findings also contradict those of Lui (200) and Pangrazi (2001) [11] who in their various studies found that gender biases in teaching and learning process influence gender difference.

Table 2: Difference between Males and Females Pupils Post -Test on Skill Concepts Acquisition and Retention

Posttest	Groups	N	Mean	SD	T	Df	P value
	Male	15	3.11	.676	-.257	34	.799
	Female	15	3.17	.618			

$\alpha = .05, p > .05$

Table 2 shows that a t-value of -.257 was obtained which was insignificant at a p-value of .799. Since the p-value is greater

than the alpha level of 0.05, the null hypothesis which states that there will be no significant difference between male and female pupils' skill concepts acquisition and retention at post-test was also upheld. Therefore, there was no difference between male and female pupils' skill concept acquisition and retention at post-test.

This result opposed the results that gender differences in terms of performance exist between early adolescence stage and adolescence stage (Kahle, 2004 & Payne & Isaac, 2002). The findings also contradict those of Lui (2006) ^[12] and Pangrazi (2001) ^[11] who in their various studies found that gender biases in teaching and learning process influence gender difference.

Table 3: Difference between Male and Female Pupils Retention-Test on Skill Concepts Acquisition and Retention

Retention test	Groups	N	Mean	SD	T	Df	P value
	Male	15	3.11	.471	-2.364	34	.024
	Female	15	3.50	.514			

$\alpha = .05, p < .05.$

Table 3 shows a t value -2.364 with a p value of .024. Since the p value is less than the alpha level of 0.05, the null hypothesis that there will be no significant difference between male and female pupils' skill concepts acquisition and retention at retention-test is rejected. This means that significant differences exist between male and female pupils' skill concept acquisition and retention at retention test. The result, statistically indicated that females recorded higher achievement in retention test than their males' counterparts.

This result contradicts that of Pangrazi (2001) ^[11] that when male teachers give boys more praises for achievement than girls it will affect female performance. However, the finding disagrees with Kahle, (2004) ^[10] that children experience different levels of ability in different subject areas as well as types of problems given to them to solve especially during adolescence stage.

4. Conclusion

Despite the learning similarities between boys and girls, the rate in their retention of concepts and skills learnt differ at pre-adolescence stage. This may depend on differences in maturation, learning environment, and other developmental factors. Skill concept acquisition and retention are acquired through practice. However, the practice needs to be structured so that retention can occur. Skills in primary school should be taught progressively. At the practice stage pupils should be given a variety of activities to practice for refinement. Later, an increase in resource load which means a higher number of task to execute, a lower time frame to accomplish them and greater fatigue. In so doing, pupils will automate the skill by executing other tasks simultaneously and under less stress conditions. Until this is done retention of skill concept acquisition cannot be guaranteed across gender.

5. Recommendations

In order for teaching in the lower primary to benefit all children, teachers should do the following:

1. Teachers should employ variety of teaching and learning methods in order to increase skill concept acquisition and retention.
2. Teachers should give children more time to practice the skill because correct practice leads to correct mastery of skills concept acquisition and retention.

3. Appropriate teaching and learning materials should be used in teaching practical lesson to enable pupils to acquire correct skills for future development.
4. Development of skills at the primary level should be progressive and developmentally appropriate for effective skill acquisition.
5. Physical education teachers should be sensitive to gender equity in all class activities for effective skill concept acquisition and retention across gender.

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