

The Impact of Teaching the Skills of Basketball Curriculum by Using the Strategy of Numbered Headers on Developing Creative Thinking

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Abstract

This study aimed at identifying the impact of teaching the skills of basketball curriculum by using the strategy of numbered headers on developing creative thinking (Brinston test) among the students of Basketball (2) in the faculty of Sports sciences at the University of Jordan during the academic year (2023/2024). The study used the quasi-experimental approach. The study sample consisted of (30) students, who were divided into two groups; the control group that studied using the usual way, and the experimental group which studied by using the numbered headers strategy. Princeton developed test was applied to both groups at the beginning of the semester (pre-test) and at the end of the semester (post-test), and (t-test) was used. The results revealed that there are statistically significant differences in creative thinking in favor of the experimental group. The study recommended the necessity of applying the strategy of numbered headers in teaching sports skills in the various group games.

Keywords: Numbered Headers Strategy, Developing Creative Thinking, Basketball (2).

1. Introduction

Cooperative learning is considered as one of the best strategies of modern learning, which is based on distributing tasks among the group members, where those members cooperate with each to achieve the targeted task (Tran, 2019; Al-Daseet and Atiyat, 2023).

The numbered headers strategy is considered amongst cooperative learning strategies, where one of the group members is responsible for the learning of his group and the success of the delegated tasks that should be accomplished according to the number that he was given in his group by the teacher. The numbered headers strategy is an interesting strategy that can be used in the various academic courses and curricula (Salam, 2021).

Learning for thinking development is amongst the objectives of education, where schools should provide learning opportunities to learners; however, this objective often contradicts with reality in practice, and contradicts with the traditional educational system (Al-Sarayreh, 2023). Even

though the majority of the workers in the educational domain are convinced with the importance of developing the skills of creative thinking among students, and that the student is the center of the educational process, the adopted traditional practices in schools prevent achieving that purpose (Al-Hatari and Al-Farwi, 2022). Furthermore, it has been necessary to provide learners with the skills of creative thinking to shape their personality and enable them to cope with the increased knowledge in the current era, where those in charge of the educational process should pay more attention to acquiring learners with those skills (Imran, et al., 2019) and (Al-Sarayreh, 2023). Some studies revealed that there is a positive relationship between creative thinking, skilled performance, and academic achievement (Yousef, 2019).

1.1. The Study Problem

The study idea was cited after reviewing several previous studies relevant to the effect of modern teaching methods and strategies in general and the strategy of numbered headers in particular, on learners, in terms of the variable of knowledge or skilled achievement among learners. Also, some studies addressed the psychological domains, such as improving motivation among students and reducing the problem of bullying among learners. Some studies also investigated the effectiveness of the strategy of number headers in teaching some theoretical courses, such as language, science, and social studies, as well as practical courses, such as music, art, computer and physical education (e.g. Salam, 2021), (Al-Hatari, 2022), (AbdulRaheem, 2023), (Al-Sarayreh, 2023), (Qobaisi, 2023), and (Mitwali and Shahat, 2019).

Alqam, et al., 2023) confirmed the necessity of developing creative skills among students as well as paying more attention to providing learners with the skills of creative thinking, analysis and problem-solving, in addition to developing a creative generation that is capable of discovering new things and get out of the familiar way of learning. (Kangan, 2009) confirmed the importance of numbered headers strategy and its role in developing creative thinking, where learners participate actively with their teacher and individuals' differences are taken into consideration.

It has been noticed that there is a low level in some creative thinking skills among the students of practicum courses in group games, including tactical, defense and offense skills; therefore, it is hoped that more efforts should be done to develop the skills of creative thinking among learners. This study aimed to identify the impact of numbered headers strategy on developing creative thinking among the individuals of the experimental group, where the study problem was cited in the following question:

Is there an impact for teaching the skills of basketball course by using the strategy of numbered headers on developing creative thinking skills among the individuals of the experimental group?

1.2. The Study Objectives

The current study aimed at identifying the impact of teaching the skills of basketball curriculum by using the strategy of numbered headers on developing creative thinking among the students of Basketball (2) in the faculty of Sports sciences at the University of Jordan during the academic year (2023/2024).

1.3. The Study Importance

The study importance lies in its contribution to enriching the theoretical literature with a new study that aims to improve the process of education and help those working in the educational field, including supervisors, administrative staff and teachers in developing the educational process in general and improving the learner's personality in particular. The study also aims to provide educationalists with the results of the newest studies about the effectiveness of teaching strategies and their impact on improving the skills of creative thinking that are necessary to develop the personality of learners, especially with regard to teaching the courses of group games in the specialty of physical education. After reviewing the previous studies, it has been noticed that there is a paucity in the studies that addressed the topic of numbered headers and their effect on developing the skills of creative thinking among learners in the Jordanian schools and universities, and the learners in the surrounding countries in the Arab Gulf and the Middle East. Therefore, this study could be a futuristic starting point to similar studies of various individual or group game courses in physical education that would address different variables, such as gender, academic level, specialty, etc.

1.4. The Study Question

This study aims to answer the following question:

Are there statistically significant differences at (0.05) in the post test between the control group and the experimental group in developing the skills of creative thinking attributed to teaching the skills of basketball course using the strategy of numbered headers?

1.5. The Study Terms

Numbered headers strategy: a strategy that is based on dividing standards into groups of (3-5) students, where each group has similar numbers, and the group members put their heads together to verify the validity of the answer to the teacher's question, and the required number holders give their answer to the other groups.

Creative thinking skills: they refer to coming up with new ideas and solutions for the challenges and situations faced by learners while learning Basketball (2) course using the numbered headers strategy, and these skills are assessed based on the sample individual's response to Princeton test.

Basketball (2) course: one of the basic courses of group games within the syllabus of physical education, where it includes theoretical and practical domains in which students study various competencies, knowledge and skills.

Princeton developed test (creative thinking): It is a test that assesses the level of creative thinking skills among the sample individuals. It was developed by Princeton in 1989 and translated to Arabic to be compatible with the Jordanian environment by (Al-Sorour, 2002), and later it has been modified by the study author for the purposes of this study; its validity and reliability were verified.

1.6. The Study Limits

The spatial limits: the study was limited to the students of Physical Education enrolled in Basketball (2) course in the Faculty of Physical Education and Health Sciences at the University of Jordan/Jadara.....

The human limits: the students of Physical Education enrolled in Basketball (2) course

Temporal limits: The study was implemented in the second semester of the academic year (2023-2024)

Objective limits: The study results were generalized to the use of study tools and related characteristics of validity and reliability as well as the sample individuals' responses.

2. Previous Studies

In his study, Qobaisi (2023) aimed at identifying the effect of using the numbered heads strategy on improving the level of performance of some basic skills in football and the motor satisfaction of a student at the Faculty of Physical Education at Sohag University. The experimental method was used due to its compatibility to the study nature. The sample was chosen intentionally and included (70) students. The results showed an improvement in the performance of basic football skills and motor satisfaction among the experimental group, where it encouraged positive participation and cooperative work among the participants. In a similar vein, Mohammad (2022) aimed to identify the design of an extracurricular physical education program using the numbered headers strategy and its impact on developing some motor skills and reducing school bullying among primary school students. One experimental group has been used, and a purposive sample that consists of (50) students has been selected. A test of motor skills and a measure of school bullying behavior have been designed. The results highlighted the effect of the numbered headers strategy on developing motor skills among the study sample individuals and reducing school bullying behaviours. Furthermore, Atef (2021) aimed to identify the effect of using the numbered headers strategy on some learning outcomes of the long jump competition for first-year female students in the Faculty of Physical Education at Alexandria University. The study sample consisted of (80) female students, and the study used the experimental approach. The results confirmed the effect of the strategy on improving the achievement of the study sample individuals in favor of the experimental group.

In their study, Mazhar and Majeed (2021) aimed at identifying the impact of an educational curriculum according to the numbered headers strategy on developing creative thinking in handball. The study sample consisted of (52) students from the third stage at the College of Physical Education and Sports Sciences in Kirkuk, Iraq. The experimental approach was used and the sample members were divided into two groups, control and experimental. The results showed an improvement in the performance of basic handball skills, in favor of the experimental group, where the strategy resulted in active participation, excitement, and cooperative work among the experimental group individuals. In a similar vein, Youssef (2019) aimed to identify the relationship of creative thinking with skill performance and academic achievement. The study used the descriptive approach due to its compatibility to the nature of the study. The study

sample consisted of (52) students, who were chosen purposively. Princeton creative thinking scale and football skill tests were applied to them. The results showed that there was no significant correlation between creative thinking skills, skill performance and academic achievement. The study recommended the necessity of improving the skill performance and developing the creative thinking skills among the study sample members. Moreover, Ben Amara, et al (2019) aimed at identifying the impact of the cooperative learning strategy on developing general creative thinking skills during the physical education class for middle school students. The study sample consisted of (70) male and female students distributed into two groups, a control group that studied in the traditional method and an experimental group that studied using cooperative learning. The results revealed that there were statistically significant differences in favor of the experimental group. The study recommended applying various cooperative learning strategies (such as the numbered headers strategy and others) in the lessons of physical education. Finally, Al-Hammouri (2017) aimed to identify the impact of an educational program based on the cooperative learning strategy on creative thinking skills and digital achievement of the javelin throwing event among the students at the University of Jordan. The study sample consisted of (29) students from the Faculty of Physical Education at the University of Jordan distributed into two groups: the control group that studied in the traditional method and the experimental group that used the educational program using the cooperative learning strategy, and after the end of the experiment application: the two groups were subjected to the post-test of the creative thinking and digital achievement test for the javelin throwing event. The results of the study showed that there were statistically significant differences between the two groups with regard to improving the skills of creative thinking and digital achievement in favor of the experimental group.

After reviewing the previous studies, we noticed that there is more interest in studying the impact of the numbered headers strategy and its role in improving the educational process. Those studies addressed its impact on various dependent variables, including academic achievement, motor and skill performance, as well as violence, bullying, and creative thinking skills, in addition to various topics and courses. This study seeks to identify On the effect of the numbered headers strategy on developing creative thinking skills in the basketball course (2). As far as the researcher knows, there has not been a similar study that addressed similar topic and variables; therefore, it is a starting point for similar studies in this domain.

3. Method and Procedures

The quasi-experimental approach has been used based on an experimental group and a control groups due to its compatibility to the nature of this study.

Study population: The study population consists of (41) students from the Faculty of Sports Sciences/the University of Jordan registered for the basketball course (2) during the first semester of the academic year 2023/2024.

Study sample: The study sample consisted of all the students of the Faculty of Sports Sciences/ the University of Jordan registered for the basketball course (2), with a total of (30) students during the first semester of the academic year 2023/2024.

3.1. The Study Procedures

A pilot study that consisted of (11) students (outside the study sample) was conducted to determine the preparations and verify the readiness for implementing the study procedures.

The study sample was selected randomly from the study population and distributed to the two groups randomly, with (15) students in the experimental group and (15) students in the control group.

The items of the Bernstein Test of creative thinking were modified, and the validity and reliability factors of the developed test were verified.

The experimental group and control group were subjected to a pre-test to assess creative thinking skills before starting to teach the course using the numbered heads strategy, to ensure that the two groups are equal.

The theoretical and practical lessons of the course were implemented by using the numbered headers strategy on the experimental group during the semester, while the control group studied by using the traditional way.

The theoretical literature related to the numbered headers strategy and the mechanisms of applying it were reviewed.

The post-test for the Creative Thinking Skills Scale was applied at the end of teaching the basketball course (2) using the numbered headers strategy, to find out whether there are differences between the two groups, and in favor of which group. Then, T-test, was conducted for independent data.

The response scale consisted of five response possibilities on a five-point Likert scale, ranging from: strongly agree (5), strongly and disagree (1). The scale's items were formulated in a negative and positive way, and three mean levels were adopted as indicators of the responses to the creative thinking skills test: less than (2.99) low, (3.00) neutral, and (3,10 - 5.00) high.

3.2. The Study Instrument

In order to achieve the study objective and answer its question, the Princeton test- developed for the Jordanian and Arab environment by Al-Surour (2002) - was used to measure the creative thinking skills of the sample members. This developed test was used in studies of the sports field, such as the study of Khattab (2011) and Bout (2018). The test was developed, some of its items were modified, and its validity and reliability were verified. It consisted of (43) items that measure the creative thinking skills among the sample individuals.

3.2.1. The validity of the study instrument

The test was presented to arbitrators of those specialized in education, psychology, and physical education, where their comments and modifications were taken into account, and the test was approved in its final version.

3.2.2. The reliability of the study instrument

To ensure the reliability of the scale, it was applied to a pilot sample similar to the study sample, and then re-applied to the same sample after a week (Test, Re-test) and the reliability coefficient was calculated. The value of the reliability coefficient for the items of the scale was (0.81), which is a sufficient value.

3.3. The Study Variables

Independent variable: Teaching basketball skills course (2) using the numbered headers strategy.

Dependent variable: developing creative thinking skills.

Statistical processing: Descriptive statistics (means and standard deviations) and t-test were performed for the independent groups for the pre-test and post-test.

4. The Study Results and Discussion

This study aims to answer the following question:

Are there statistically significant differences at (0.05) in the post test between the control group and the experimental group in developing the skills of creative thinking attributed to teaching the skills of basketball course using the strategy of numbered headers?

In order to answer the study question, the study members were randomly distributed into two groups: experimental and control, and then the two groups were subjected to a pre-test to ensure that the two groups were equal in responding to the creative thinking skills test, and detect that there were no statistically significant differences between them before starting to teach the course, where t-test was conducted for the independent groups. The results are illustrated in table (1):

Table 1: T-value of the pre-test in developing creative thinking skills attributed to teaching basketball course skills using the numbered headers strategy at the level ($\alpha \leq 0.05$)

Group	Mean	SD	T-value
Experimental (15)	2.56	0.35	0.83
Control (15)	2.49	0.44	

Tabulated T-value 2.05

Table (1) revealed that the differences between the experimental and control groups are small and not statistically significant at the level of ($\alpha = 0.05$), where the calculated (t) value was (0.83). Therefore, the experimental and control groups are equivalent in responding to the pre-test of vreative thinking skills. At the end of the semester and after the completion of teaching the course to the experimental group using the numbered headers strategy, the post-test was conducted for the two groups. The results of the t-test for the independent groups are shown in Table (2).

Table 2: T-value of the post-test in developing creative thinking skills attributed to teaching basketball course skills using the numbered headers strategy at the level ($\alpha \leq 0.05$)

Group	Mean	SD	T-value
Experimental (15)	3.89	0.41	*6.27 significant
Control (15)	2.48	0.47	

Tabulated T-value 2.05

Table (2) revealed that the differences between the experimental and control groups are statistically significant at the level of ($\alpha = 0.05$), where the calculated (t) value was (0.27). The differences in developing creative thinking skills that are attributed to teaching the skills of the basketball course using the numbered headers strategy were in favor of the experimental group. Item (37) had the highest mean for the experimental group, with (4.3), and stated: “I do care about being considered as an important member in the team,” while item (30) had the lowest mean, with (2.8) and stated: “I enjoy manipulating new ideas even when there is a practical use for them.” The average mean for the experimental group responses to all the pre-test items was (3.9), which is a high mean score, while the average mean for the control group's responses to all the post-test items was (2.48), which is a low mean score.

It has been suggested that the superiority of the experimental group is attributed to the effect of the numbered headers strategy and its positive features in providing the student with the new skill and teaching him in an attractive environment for learning, that is rich in the spirit of cooperation and excitement, in contrast to the negative role of the learners in the control group who received orders in a traditional way from the teacher, as the teacher is the center of the educational process, where he bears the responsibility for education in all its stages, including planning, implementation, and evaluation. However, while applying the numbered headers strategy, we noticed that many tasks are transferred to the learner, who takes the responsibility for implementing and experiencing educational experiences and dealing with them in the spirit of a positive, proactive team in gaining and sharing experiences. In this vein, the strategy contributed to enhancing self-confidence among learners and provided them with creative thinking skills, where practical courses in physical education are rich in tactical domains, including individual and collective defensive skills, individual and collective offensive skills, as well as other technical aspects related to the rules of the game. Here, we should not overlook the strategy's effective role in creating a spirit of cooperation, in which the group members exchange experiences with each other and invest them in promoting the group while competing with other groups. This generates ideas and proposals for diverse experiences and links them with previous experiences during the course, where there is diversity in using specific educational tools and methods that are beneficial to the group's learning. Indeed, this contributes to developing the learners' abilities to make the right decisions and promoting their creative thinking skills in various fields, in addition to increasing the academic achievement of students based on this strategy. As for the importance and role of the numbered headers strategy in education and in developing creative thinking skills, the results of this study agreed with the results of Al-Hamouri (2017), Al-Hatari and Al-Farawi (2022), Al-Sarayrah (2023), Mezher and Majeed (2021), Imran, et al, (2019), Tran (2019), Kagan (2009), Ben Amara et al (2019), Atef (2022) and Fernandez & et al(2024) as well as many other studies that agreed on the importance of the

numbered headers strategy in improving the learning process and developing creative thinking skills.

5. Conclusion

Based on the study results related to answering its questions, it can be noticed that the current study has made an additional contribution by addressing the topic of teaching sports skills in the course of a popular group game, and the positive effect of that on improving the skills of creative thinking. Indeed, the topic of improving creative thinking skills by using the strategy of numbered headers in the domain of teaching group games, especially in the course of basketball hasn't been addressed previously. Accordingly, the process of improving and developing the skills of creative thinking represents a new addition in the domain of scientific research, and paves the way for conducting further studies that address the impact of numbered headers in other skilled courses for group and individual games in the future. Also, similar studies that address various courses in individual and group games in physical education can address variables, such as gender, academic level and the specific specialty, as there is still paucity in addressing those domains.

6. Recommendations

The current study concluded the necessity of applying the numbered headers strategy in teaching group courses in physical education, paying more attention to providing learners with creative thinking skills while teaching and developing courses, conducting further studies about the impact of the numbered headers strategy on the areas of creative thinking, its impact independently on each domain, and the interaction between the domains of creative thinking skills as well as conducting future studies about the effect of the numbered headers strategy on learners' achievement in practical courses of individual games, such as gymnastics, racket games, self-defense, and athletics, and applying the numbered headers strategy in practical courses and specializations, such as computers as well as scientific and medical laboratories.

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Princeton test in creative thinking 2023

Num	Item	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	I can solve my problems if I follow a logical progressive approach					
2	Some activities interest me more than other students					
3	I learn what I believe to be the right thing, without caring about what others think					
4	I have the ability to endure problems for a long time.					
5	Sometimes, I get too enthusiastic about things.					
6	Sometimes, I follow the correct and unusual procedure to solve my academic problems					
7	I take the time to organize the information I collect and present it in the best possible way					
8	I hope to find an answer to all the questions on my mind					
9	Deep thinking helped me solve many of my problems.					
10	I do my best to reach the high level and power in life.					
11	I like to get close to serious and objective students.					
12	Inspiration has nothing to do with the right solution to problems					
13	I like students who are more confident in their conclusions					
14	I accept constructive criticism when I violate some instructions					
15	I tend to avoid situations where I feel like I'm intruding.					
16	I am interested in presenting new and unusual ideas					
17	A person's self-respect is more important than others' respect to him.					
18	I evaluate information based on its source					
19	I often enjoy thinking alone					
20	I prefer to work with others rather than working alone					
21	The secret of human success is due to hard work					
22	I like the work that attracts the attention of others					
23	I can maintain my motivation and enthusiasm for many sporting achievements even in the presence of frustration and obstacles					
24	Often, I cannot solve many of the problems that I face in life.					
25	I admire the good, and unfamiliar things					
26	I don't like to ask uninteresting questions					
27	I like reviewing modern, strange and unusual books					
28	Whenever I take on a project, I do my best to succeed in it					
29	Sometimes, I have thoughts that are beyond my control					