

Investigating the Effect of Brain-Storming Strategy in the World Islamic Sciences and Education University Students' Attainment

Ibrahim Abdel Ghani Salameh

College of Physical Education and Sport Sciences, The Hashemite University, Zarqa, Jordan

E-mail: dribrahim@yahoo.com

Abstract

This study aimed at investigating the effect of Brain Storming Strategy in the World Islamic Sciences and Education University students' attainment in the course of "Sport and Health". The community of study consisted of 431 in the first semester of the academic year 2012-2013. The sample of study, which was randomly chosen consisted of 68 male and female students and was divided into two groups; the experimental group (34 studied by using brain storming strategy) and the controlling group studied by the classical method.

An attainment exam was used to measure the students' attainment and the reliability coefficient amounted to (0.80). The results of the study showed that there were differences with statistical indication at in the students' attainment in the "Sport and Health" course ascribed to the strategy of teaching in favor of brainstorming strategy, sex and interaction between them. The researcher deduced numerous recommendations, such as the necessity of training the teaching staff members in general, and professors of "sport and health" in particular to be trained on using brainstorming strategy.

Keywords: Brain Storming, Students, Jordan.

1. Introduction

With the advent of the hastening typical developments in all sides of life, and in time of technology domination, the astonishing means of communications, and the hastening cognition, there appeared the increasing calls for making changes in methods of thinking, for what thinking has of significance assists students to acquire the skill of interaction with this various age in its vocabulary and quick incidents. This is what called the educational leaders to the necessity of reviewing all methods of teaching and their employed techniques at our schools and universities, for the ancient and classical methods of teaching, with their instruments did never have the influence as they had earlier. And from here the calls appeared to get out students with their levels from the classical environment to a more innovative one, meeting their needs, by preparing students and qualifying them to own renewing skills, to be used in all sides of their different life, and grant them the continuous support, the thing that positively affects their academic conditions especially attainment.

From these methods, the strategies that support and increase attainment, they are the strategy of brain storming, which became one of the most used and widespread strategies in the educational sector. And it is a strategy with a basis for the teacher to divide students into groups and raise a certain problem, and then students suggest various solutions. And there are some studies related to the study, such as Bani Ahmad study (2006), that aimed at getting acquainted with the effect of brain-storming strategy on Basic Eighth Grade students in the subject of General Science. Two random sections were chosen, consist of (64) students, and had been divided into two groups: controlling and experimental. The experimental group was taught by using the strategy of brain-storming, and the controlling group was taught by using the habitual method. And the researcher prepared and applied an attaining test of the multiple choice type, consisting of (33) paragraphs and four alternates on both groups. The study also showed that there are no differences with statistical indication between both averages of students grades, who studied by using the strategy of brain-storming, and grades of students, who studied by using the habitual method, ascribed to the strategy of teaching.

Also Sadouh's (2013), aimed at recognizing the effect of using the strategy of brainstorming and electronic education on attainment, development of innovative thinking skills at the sixth Grade, and their trends towards learning the unit of geometry in the subject of mathematics, and the sample of study consisted of (69) students of Kertine School in Jerash Governorate for the Scholastic year 2012/2013. And the sample of study was divided into two experimental groups: the first consists of (34) students, studied in accordance with the strategy of brain-storming, and the other consists of (35) students, studied in accordance with the strategy of electronic education. The statistical results showed the existence of differences with statistical indication in attainment for the interest of the experimental group, which was studied in accordance with the brain-storming strategy.

The study of Rizi Cobra, Nigabour, Mutjana, Haggani, Faribani, and Shahladghan (2013) aimed at reconnoitering the effect of the brain-storming method on the academic attainment of the fifth elementary Grade Students at Tehran Schools in Iran in the Scholastic year (2010-2011), and to achieve this objective (60) students were chosen by using the racemose sample, where they were equally divided into two groups; experimental studied by the method of brain-storming and a controlling group studied by the classical method (the lecture).

The researchers did organize a prior examination for both groups. And after applying the study, the researcher organized a sub sequent examination. And for the sake of examining the hypothesis of study, the researcher used the T-Test. And the results showed that using the method of brain-storming has a positive effect on the student's academic attainment.

In addition, Sudan's Study (2011) aimed at recognizing the effect of strategic usage of brain-storming and the solution of problems in studying attainment in the textbook of sociabilities. And to achieve the objective of study the researcher used a program was designed in accordance with both strategies; the brain storming and problems solving, in addition to an attaining test. The study employed the experimental method, and was applied on a sample consisted of (189) students of the Fourth Grade, from the stage of basic education in Baniyas City, where they were randomly chosen. And the individuals of the sample were divided into two experimental groups (the first was educated in accordance with the brain-storming, and the second experimental group was educated in accordance with the strategy of problems solving) and a controlling group educated by the habitual method, and an attaining test was applied on them. And the study deduced a grip of results, the most prominent of which is that: there are differences with statistical indication between both averages of grades of the experimental group pupils, that was studied by employing the strategy of brain storming in the two applications; the antecedent and the subsequent of the studying attainment test, and these differences are for the interest of the experimental group in the subsequent application, and there are differences with statistical indication between both averages of the experimental group students, studied by employing the strategy of solving problems of the controlling group pupils, studied by the habitual method in the subsequent application of the studying attainment test, and these differences are for the interest of the experimental group. And there are differences with statistical indication between averages of the experimental group students from males and females, studied by employing then strategy of brain-storming in the subsequent application of the studying attainment test, and these differences are for the interest of females in the experimental group, which was studied in accordance with the strategy of brain-storming.

Attakhaniyah study (2006) aimed at uncovering the effect of using the strategy of brain-storming in teaching geometry in attainment and capacity of problems solving amongst the High Basic Stage Students with different levels of actual capacity. The sample of study, consisted of (388) male and female students, who were purposely chosen for the academic year 2044/2005. And the sample of study had been divided into two groups: experimental studied by the method of brain-storming and controlling studied by the habitual method. And then the researcher did an attaining test (direct & delayed). And results showed the existence of differences with statistical indication between the arithmetic mean for students grades of both groups, for the interest of the experimental group in the immediate attainment and delayed, and also existence of differences with statistical indication between the arithmetic mean for female students grades of both groups; the controlling and the experimental, for the interest of female students of the experimental group in the direct and postponed attainment.

Al-Maghrawi (2012) is a study, aimed at being acquainted with the motivation of using the strategy of brain-storming in learning some primary skills and cognitive attainment in the sport of volleyball. The researcher used the experimental method and divided the sample of study, which consisted of (50) students of the first year in the Faculty of Physical Education in Banha University /Egypt for the academic year 2011/2012 into two groups; the experimental, studied by the method of brain-storming for (7)weeks, and a controlling group, studied by the habitual method. Results showed the rate of the experimental group students' performance, which employed the method of brain-storming, was better than the performance of the controlling group in the skills, and the cognitive test of the primary skills in the Sport of the Volleyball.

As-Salamat and Al-Kharabasheh (2010) did a study aimed at getting aware of the effectiveness of using brain-storming on the Seventh Basic Grade students attainment in the geography subject and developing the trends towards it. In addition, both researchers employed the experimental method, and the sample of study consisted of (45) students of the Seventh Grade were distributed by the random method into two groups; experimental and another controlling. The instruments used were attaining test and trends scale towards the subject of geography. The study deduced the existence of differences with statistical indication at the level of both groups of study students grades; the experimental and the controlling on the attaining test, and trends scale towards the subject of geography ascribed to the method of teaching, and for the interest of the experimental group students, studied by using the method of brain-storming.

Abu Sneineh (2008) did a study aimed at uncovering the effect of using the method of brain-storming in developing attainment and the criticizing thinking in the geography subject amongst the students of the educational sciences –UNORWA, and the community of study consisted of all students specialized in class-teacher in the third year, whose number amounted to 131 male & female students, distributed among five sections, where two sections had been randomly chosen and had been divided into two groups: an experimental group amounting to (25) male & female students, studied by the method of brain-storming and a controlling group amounting to (28) students, studied by the classical method. Then the researcher applied an attaining test of multiple choice type covered forty paragraphs, prepared to achieve the objective of study. And after doing the

statistical analysis, results showed the existence of differences with statistical indication on the indication level ($\alpha=0.05$) and for the interest of the experimental group studied by the method of brain-storming.

2. Significance of Study

The significance of this study rises from the significance of the subject, in which we investigate, about that this study sheds light more on using the method of brain-storming in the course of "sport and health", which supports and improves the level of attainment amongst students. This study also motivates designers of this course, the "sport & Health" on redesigning the content this course in accordance with the basics of brainstorming strategy.

3. Problem of Study

The researcher noticed the existence of decrease through reviewing the previous educational literature of what concerns studies, which tackled using the strategy of brainstorming in the higher educational stages, such as universities and in courses concerned about physical education.

And in spite of the continuous assuring of the role of the students as a main axis of the educational process, but because of our experience and notice in the sphere of education, he is still a receiver and listener, therefore students should be well prepared in accordance with modern methods in teaching work to acquire them the skills of communication and interaction, then thing that positively affects their academic attainment. The researcher, through his job as a university professor, and because of his neighborhood and direct awareness of methods of teaching the course "Sports & Health" and its concentration on direct dictation, the thing that does not acquire students the skills of thinking and interaction, and leads to their dependence on the cognitive quantity, that negatively affects their academic attainment. And from the reasons that pushed the researcher to do this study is the fewness of studies in the Jordanian University Environment, which discussed brain-storming in general, and brain-storming in teaching the sport courses in particular at the limit of the researcher's knowledge.

From this point, the problem of study emerged in an attempt to know the effect of using the strategy of brainstorming in the attainment of students of the World Islamic Sciences and Education University in the course of "Sport and Health".

4. Objectives of Study

1. Getting acquainted with the extent of effectiveness of employing the strategy of brain-storming in the students of the World Islamic Sciences and Education University attainment in the Course of "Sport and Health" in light of variables of the teaching and specialization method.
2. Assisting teachers, especially university lecturers to know how to motivate and use the strategy of brain storming in teaching, for the sake of enriching the course of "Sport and Health" with all new methods of teaching.

5. Questions of Study

1. Does the attainment of the World Islamic Sciences and Education University students differ in the course of "Sports and Health" with the difference of the teaching method?
2. Does the attainment of the World Islamic Sciences and Education University students differ in the courses of "Sport and Health" with the difference of student's Sex?
3. Does the attainment of the World Islamic Sciences and Education University students differ in the course of subject of " Sport and Health " as a result of interaction between the method of teaching and students sex?

6. Procedures

6.1 Method

The researcher depended the semi-experimental method to uncover the effect of using the method of brain-storming on students attainment in the course of "sport and Health" compared with the habitual method, where the researcher had applied the experimental designing for two groups: one is experimental and the other is controlling, that is by applying antecedent and subsequent attaining test for both groups.

6.2 Population

The population of study consisted of all students of the World Islamic Science and Education University, amounting to (431) female & male students, registered in the course of " Sport and Health", that is in the Second Semester of the academic year 2012/2013.

6.3 The Sample

The researcher chose a random sample, consisted of (68) male & female students, and the sample was divided into two groups: the experimental, consisted of (34) individuals, studied by employing the strategy of brainstorming, and the controlling, consisted of (34) persons and was studied by the habitual method.

Table 1: groups of study

Group	Number
The Experimental	34
The Control group	34
Total	68

6.4 Procedures of Study

The researcher did a group of procedures, can be summarized as follows:

1. Specifying the community and individuals of study.
2. Specifying the instructional unit from the course of "sport for all".
3. Preparing the instrument of study" the test".
4. Applying the antecedent attaining test.
5. Teaching by the strategy of brainstorming.
6. Applying the test and the subsequent attainment.
7. Collecting data and analyzing them.
8. Showing results, discussing them and deducing recommendations.

6.5 Instrument:

The researcher did prepare an attaining test in the course of "Sport and Health", and consisted of (20) paragraphs from the type of multiple choice.

6.5.1 Validity

The researcher showed the test to a group of arbitrators', with experience and specialization from the teaching staff members in the physical education and general instructing curriculums. And by depending on arbitrators' view and notes, some paragraphs had been amended from the part of linguistic formation and reviewing other paragraphs from part of their appropriateness of the course content.

6.5.2 Reliability

The researcher applied the test in its final form on an exploratory sample, consists of (30) male and female students from the community of the sample of study and outside the frame of the sample where the reliability coefficient had been counted by employing Koderer Richardson's equation, for the value of reliability coefficient amounted to (0.80), and it is considered an acceptable value of education for the studying purposes.

7. Results and discussion

This study aimed at reconnoitering the effect of employing the strategy of brainstorming on students of the World Islamic Sciences and Education University attainment in the course of "Sport and Health". Number of individuals of the study amounted to (68) male and female students, were divided at a random method in two groups; experimental and controlling. The strategy of instruction was applied on the experimental group and to investigate the effect of strategy in attainment an attaining test was employed in the course of "sport and Health". Prepared by the researcher, for it was antecedently and subsequently applied on both groups.

And after the researcher had extracted the degrees on the attaining test, a statistical analysis was done (co-variation analysis – (ANCOVA). In the following a show of answering questions of study:

To answer the first question: does attainment of the World Islamic Sciences and Education University students in the course of "Sport and Health" differ due to difference of instruction method?

Co-variation analysis (ANCOVA) had been done that is to control the basic differences in the performance on the antecedent test for the attaining test in both groups, the experimental and the controlling, and extracting the amended arithmetic means and values of standard deviation for measuring the attaining test due to the variable of study, the groups (experimental and controlling), and interaction between these groups. And the table No1 clears results of the co-variation analysis (ANCOVA) of performance on the attaining test due to the variable of the group.

Table 2: Results of co-Variation analysis of performance on the attaining test for the strategy of teaching

Variation Sources	Squares Total	Degree of freedom	Averages of Squares Total	F	Sig.
Group	614.017	1	614.017	256.57	0.000
Interaction	114.879	1	114.879	48.075	0.000
Mistake	155.322	65	-	-	-
The whole	12962.67	67	-	-	-

The hypothesis emerged from this question was examined and words:

There are no differences with statistical indication at the level ($\alpha = 0.05$) between both averages of attainment amongst students of the World Islamic Sciences and Education University in the course of "Sport and Health"

ascribed to the method of instruction”.

The amended arithmetic means and values of standard deviation were extracted for both groups; the experimental and the controlling and table 3 clears that.

Table 3: amended arithmetic means and values of the standard deviation due to the variable of groups.

Group	Amended Arithmetic	Standard Deviation
The Experimental	16.257	2.16
The Control	10.2121	1.866

It is clear from results in table (3) that there are differences in the amended arithmetic means on the subsequent scale of both groups; the experimental and the controlling, where the amended arithmetic mean of the experimental group amounted to (16.257) mean-while the amended arithmetic mean of the controlling group amounted to (10.2121), and to examine the differences among the amended arithmetic means of groups, F. value had been extracted.

And by looking at the table 2, we find that the value of F. test of the variable of the group had amounted to (256.957), and it is a value with statistical indication at the indication level ($0.05 = \alpha$), the thing that indicates to the incorrectness of the emerged zero hypothesis of the first question, which words: "there are no differences with statistical indication at the level ($0.05 = \alpha$) between both averages of attainment of the World Islamic Sciences and Education University students in the course of “Sport and Health” ascribed to the method of teaching?" and this means that there is an effect of the method of teaching on the students attainment and for the interest of the experimental group which received a training on the strategy of brain-storming, for the average of the performance for the individuals of the experimental group on the subsequent scale of the attaining test was higher than the average of the controlling group individuals performance on the subsequent scale, on the same test.

The researcher ascribes this result to the effectiveness of brain-storming strategy in supporting awareness and understanding in what concerns the course, and also the nature of brain-storming strategy in its learning on raising questions supports the students drives and their enthusiasm towards the course and its content, and this is considered an indicator that this method which considered modern for students, and shared in raising their attaining level in the courses of “ Sport and Health” through the positive interaction done by students, with activating the education activities in this field. And also this modern strategy could meet students' needs and observe their individual differences; the thing that made the method distinguished for liveliness and effectiveness, and so increased students' attainment.

And this agrees with what results of studies made by (Reezi et al, 2013, Al- Maghrawi, 2012, abu Sneineh 2008, Bani Ahmad,2006, and Al-khataine,2006) assured that the success of brain-storming in supporting students’ level in attainment referred to that this modern method has numerous if positiveness that make it more acceptable and exciting amongst students’, the thing that is positively reflected on their attaining level at the different studying subjects.

To answer the second question:”does attainment of the World Islamic Sciences and Education University students differ in the course of “Sport and Health” by the difference of students’ sex”. The co-variation analysis had been done (ANCOVA) of the experimental group due to the variable of sex.

And table (4) clarifies the results of the co-variation analysis (ANCOVA) for the subsequent performance on the attaining test for the experimental group due to the variable of sex.

Table 4: Co-Variation analysis for the subsequent performance on the attaining test for the experimental group due to the variable of sex

Variation Sources	Squares Total	Degree of freedom	Averages of Squares Total	F	Sig.
Group	613.202	1	613.202	168.568	0.000
Sex	33.749	1	33.749	9.278	0.003
Mistake	236.452	65	3.683	-	-
The whole	12962.00	67	-	-	-

By looking at the table 4 we find that value of F-test for the variable of sex had amounted to (9.278), and it is a value with statistical indication at the level of indication ($0.05 = \alpha$), the thing that indicates to the incorrectness of the emerged Zero” hypothesis from the second question, which words" there are no differences with statistical indication at the level of ($0.05 = \alpha$) between both averages of the effect of effect of employing the brain-storming strategy on attainment of the world Islamic Sciences and Education University students in the course of “ Sport and Health”, a scribed to sex? And this means that there is an effect of the students sex on the attainment of students and for the interest of the experimental group, which received a training on the strategy of brainstorming.

The hypothesis emerging from this question was examined and words: "There were no differences with statistical indication at the level of ($\alpha = 0.05$) between both averages of attainment of the world Islamic Sciences and Education University students in the course of " Sport and Health", a scribed to student's sex?".

Where the amended arithmetic means and values of standard deviation for both groups: the experimental and the controlling, and the table 5 clears that.

Table 5: amended arithmetic means and values of standard deviation, due to the variable of groups:

Group	Amended Arithmetic Mean	Standard Deviation
Males	12.392	3.10
Females	13.975	3.88

It is clear that the amended arithmetic means on the subsequent scale of the attaining test for the variable of sex (males and females), the females were higher in them than males, the amended arithmetic mean of the males amounted to (12.392), meanwhile the amended arithmetic mean of the females amounted to (13.975). And to examine the differences among the mean for males and females performance on the subsequent scale of the attaining test, and by referring to the table no.(3) it is clear from results of co-variation analysis of the experimental group for the variable of sex that the value of F. test had amounted to (9.278), and it is a value with statistical indication at the level of indication ($0.05 = \alpha$), the thing that indicates to rejection of the zero hypothesis that words on "there are no differences with statistical indication at the level of ($\alpha = 0.05$) between both averages of attainment of the worlds Islamic Sciences and Education University students in the course of "sport and Health" ascribed to the student's sex". And this means that the variable of sex (males and females) has an effect on the individuals of study performance in the subsequent scale on the attainment test for the interest of females, of the differences among the amended arithmetic means for the subsequent performance on the attaining test for females from the individuals of study was higher than males.

This result agrees what was provided in results of Sudan's study (2011), which indicated to the existence of differences with statistical indication ascribed to sex in the attaining test after employing the method of brainstorming in teaching. And this can be ascribed to that the nature of female students' nature of sex and their personal characteristic traits assisted in getting benefit from the method of brain-storming in a better form, and their embarking upon everything new.

And to answer the third question: "does attainment of students of the Third Basic Grade, who studied the unit of reactions as a result of interaction between the method of teaching and the student's sex?" for the co-variation analysis (ANCOVA) had been done for the experimental group, due to the interaction between the method of teaching and student's sex.

Tale 6: Results of co-variation analysis of the subsequent performance on the attaining test, due to the variables of sex, method of teaching and interaction among these variables.

Sources of Variation	Squares Total	Degree of freedom	Average of Squares Total	F	Sig.
Sex	0.173	1	0.173	2.818	0.10
Method of teaching	12.624	13	0.0971	20.042	0.000
Sex in the academic attainment	0.458	10	0.046	0.945	0.503
Mitake	2.083	34	0.048	-	-
The whole	58.657	25	-	-	-

It is clear through looking at the table 6 that results of co-variation analysis (ANCOVA) had shown that the value of F.test of interaction between both variables of sex and the academic attainment had amounted to (0.945), and it is not-statistically indicative at the level of indication ($0.05 = \alpha$), the thing that indicates to the acceptance of the zero hypothesis, which words that "there are no differences with statistical indication at the level of indication ($0.05 = \alpha$) between both averages of attainment of the world Islamic Sciences and Education University students in the course of "Sport and Health" ascribed to interaction between the method of teaching and the student's sex". The researcher ascribes this result to that employing of brain-storming is appropriate to both sexes in the section. In addition, the procedures followed for purposes of practical application are clear and easy for the strategy of both sexes.

8. Recommendations

1. Encouraging instructors of the course of "Sport and Health" on showing the content of the course by employing the strategy of brainstorming.
2. Implying the course of "Sport and Health" a content that supports employing the method of brainstorming.
3. Organizing training courses for professors of universities in general and for instructors of the course

“Sport and Health” in employing the strategy of brainstorming to be really applied.

References

- Abu Sneineh, Oudeh (2008). Effect of using the method of brainstorming in Developing attainment and Critic – thinking in the subject of geography amongst Students of the Faculty of Educational Sciences/UNORWA, *An-Najah University Journal for Researches: Humanities*, 22(5).
- Al-Agha, Murad (2009). *Effect of using the strategy of Brainstorming in Developing Some Skills of Sport Thinking in both Sides of the Brain Amongst Students of the Eleventh Grade*, Unpublished Master Degree Dissertation, Faculty of Education/ the Islamic University- Gaza.
- Al-Gouad, Ibrahim (1996). Effect of Providing Students of the Third Secondary Class with Behavioral Objectives in their attainment in the subject of Geography in Jordan, *The Arab Journal for Education, Dawha*, 12(2).
- Al-Khifaji, Taleb Mohmoud Yassin (1996). *Effect of Using Both in Functional Models; Brouner and Janeih in acquiring pupils of the Elementary Stage for the Concepts of Geography and reserving them*, unpublished doctoral dissertation, Baghdad University.
- As-Salamat, Mohammad Kheir, and Al-Kharabasheh, Zeyad (2010). Effectiveness of Using the Brain-Storming on attainment of the Seventh Basic Grade Students in the Subject of Geography, and Developing Trends towards it. *Educational Journal-Egypt*, 27, 357-383.
- Bani ahmad, Madi Abdel Raheem (2006), *Effect of Using the Strategy of Brain-Storming in the students of the Basic stage Attainment in the Subject of Science*, Unpublished Master theses, The Arab Amman University for Post Graduate Studies, Jordan.
- Rizi, Cobra Emami. Najafipour, Mojtaba haghani, Faribaani Deghan, Shahla (2013). The Effect of the Using the Brainstorming Method on the Academic Achievement of Students in Grade Five in Tehran Elementary Schools, *Procedia - Social and Behavioral Sciences* 83, 230 – 233.
- Sdouh, W. (2013). The Effect Of Using The Strategies Of Brainstorming And Computer Education in Academic Achievement And The Development Of Creative Thinking Skills Of Sixth Grade Students in Jordan And Their Attitudes Towards Learning Mathematics, *European Sciences Journal*, 9(13).
- Sudan, Fadia (2011). *Effect of using both strategies of Brainstorming and Problems Solution in the Studying Attainment in the Text of Socialibilities*, unpublished Master theses, Damascus University, Syria.

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
<http://www.iiste.org>

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

