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Effectiveness Of Educational Bulletins In The Achievement Of Fifth Grade Students In Science

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Abstract

The research aims to study the effectiveness of educational bulletins in achievement in science for the fifth grade of primary school, and the research problem is summarized in the following

1. The need to develop science subject training in a way that leads to raising the level of achievement for students and achieving the goals of science teaching.

2.The need to activate educational bulletins, given their importance as part of an educational program prepared by the teacher.

3.The need to prepare various programs for classroom and extra-curricular activities, represented by school bulletins.

The aim of the research is to diagnose the reality of classroom and extracurricular activities represented by school bulletins by applying them inside or outside the classroom.
the following hypothesis:

(There is no statistically significant difference at the level of significance (0.05) between the average scores of the experimental group who studied using educational bulletins and the average scores of the control group who studied according to the usual method in the achievement test) .

The experimental design was used and the research sample was set from Al- Samaha Primary School for Boys affiliated to Baghdad Education /Al-Rusafa/1. The research community composed of (50) students divided into two divisions (A) and (B), the experimental group composed of (Division A) and the number of its students is (25). A student, which is taught according to educational bulletins and (B) and the number of its students (25) students,

which is taught according to the usual method, and it represents the control group. Preparing an achievement test solid of (20) multiple test items with four alternatives described according to the first three levels of Bloom's levels (remember, comprehension, application).

The validity and reliability were verified, and the results showed the superiority of the experimental group, which was studied according to the instructional bulletins in the classroom, and the research came out with some suggestions and recommendations.

Article One

First: The problem of research: Given the low level of achievement among students in this subject, it is clear that the need to use modern methods and methods with the presence of the technology of school publications to develop the teaching of science may lead to an increase in the level of achievement and the achievement of the objectives of teaching science. Through the researcher's survey of the opinion of a number of science teachers at the primary level, questions were asked about the use of educational publications and summarized as follows:

1. Deficiency in the concept of educational bulletins as modern teaching activities and techniques, where (72%) of teachers emphasized the role of artistic and sports activities for students more than other scientific, cultural and social activities.
2. 56% of male and female teachers in science considered the use of educational bulletins to be present in the teaching of the subject in addition to samples and figures.
3. (48%) of teachers in science confirmed that educational publications as educational activities work to develop the mental abilities of students and to give positive tendencies towards science.
4. Many teachers agreed that there are many difficulties and obstacles facing the activation of the use of educational bulletins as activities inside and outside the classroom:

A. Lack of awareness of parents of the importance of educational bulletins in the lives of their children.
B. Lack of specialists to make educational bulletins.
C. Preferring attention to academic achievement over educational bulletins.
D. Lack of use inside or outside the classroom because of the lack of places and their unsuitability and the lack of places and supplies to store them well for future use.

So I identified the research problem with the following question:
(What is the effectiveness of educational bulletins in achieving science for the fifth grade).

Second: The Significance of the research: The importance of the current research can be summarized as follows:

1. The need to develop the teaching of science in order to raise the level of achievement of students and achieve the objectives of teaching science, which is an important area in the school program, in which educational activities can vary.
2. The need to activate these educational activities, represented by educational bulletins, given their importance as part of the educational program and the development of their mental and social abilities.
3. The results of the current research may contribute to overcoming the problem of low achievement in the subject of science, and make it a more interesting and difficult subject.

Third: The goal of the research and its hypothesis**:** The research aims to know (the effectiveness of educational bulletins in the achievement of students of the fifth primary in science). In order to verify the objective of the research, the following hypothesis was formulated :

There are no statistically significant differences at the level of significance (0.05) between the average scores of the students of the experimental group, which is studied according to the educational bulletins and the control group, which is studied according to the usual method in the achievement test.

Fourth: The limits of the research: The research is limited to:

1. Al Samaha Elementary Boys' School of Education in Baghdad governorate/ Rusafa/1.
2. 5th grade primary school students.
3. The first semester of the academic year 2015/2016.
4. Chapters I and II (organisms)/Module I.

Fifth: Definition of terms

1. **Educational Bulletins:** Defined by (Al Bayati (2015)): It is one of the pedagogical techniques used in education, as it contains the basic elements of a specific educational topic to be presented to students, and it is written with clear drawings or pictures related to the subject of the lesson, and it is used for all methodological materials, and at all stages of education. (Al Bayati, 2015: 186).

Defined by (Abdul Salam 2001): Techniques that work to provide pupils with information and mental and scientific skills and to form trends and develop

values and appreciation, and work to satisfy their needs and tendencies. which contribute to the achievement of the objectives of teaching science. (Abdul Salam/ 2001: 244).

Defined by (Mala/ 2001): It is a means to achieve many educational, psychological, social, economic and physical goals if it is well implemented, well organized, mastering its plans and continuing its evaluation and follow-up within the educational institution. (Mala, 2001, 93).

2-**Achievement:** Arafa Obaid (2004): The knowledge, skills, methods of thinking and abilities of students to solve problems as a result of studying a course. (Obaid, 2004: 307).

Shehata and Zain (2003) defined it as: the amount of information, knowledge or skills that the student receives, which is usually indicated by the test scores or scores that belong to the teachers or both. (Shehata and Zainab, 2003: 89)

Chapter Two: **Theoretical Framework and Previous Studies**

Educational bulletins: Educational bulletins are a modern technique in the teaching of science, and reduce the dependence of teachers on the blackboard , and their dimensions are (70×100) cm , and education using educational bulletins is an advanced method of educational communication, but this method depends on the study of the material to be transformed into educational bulletins where it is designed in a scientific way, and produced in an artistic way in which the educational material is integrated, taking into account the aesthetic aspect, to give education an atmosphere of excitement and sharia, and a technical link between the learner and the educational material.

Educational bulletins are one of the educational techniques used in the educational process, as they contain the basic elements of a specific educational topic to be presented to students, and they are written with clear drawings or pictures related to the subject of study, and they are used for all methodological materials, and at all stages of education . (Al Bayati, 2015 : 18)

Essential elements of educational bulletins:

1. Educational subject (subject of the lesson).
2. The method of producing the educational leaflet.
3. The process of use and evaluation.

One of the most important methods of producing educational bulletins is writing and drawing by hand directly on (carton) paper measuring (70×100) cm with the use of images related to the subject of the lesson and the use of bright colors,

and the production methods are gradual in complexity, and they are simple, easy and integrated colors with the progression of information to reach the fixed facts.

Steps in designing educational publications: It is not necessary for the teacher or student to be an artist as he prepares them through scientific journals that include pictures in attractive colors for the same subject.
Taking into account the technical and aesthetic criteria for the success of this work.
The following are methods of designing educational brochures:

1. Identify ideas and the idea is as clear as possible.
2. Identify the key elements that embody the idea.
3. Identify the secondary elements that contribute to the embodiment of the idea, and these elements are represented by images, symbols and writing.
4. The idea is conveniently cut and plotted to arrange the primary, secondary, symbolic and written images, each in its proper place.

The title (title of the idea) is shown either at the top or the bottom of the space allocated for its presentation, and the basic image that embodies the idea is placed in the middle and symbols, pictures and writing (secondary elements) are placed around it or graded in the form of colored arrows that lead the learner to the basic idea.
The arrangement shall be balanced in accordance with the educational material.
The question then arises before the final edition of the educational bulletin, for example:

1. Do the pictures have clear connotations?
2. Are images and icons consistent with learning objectives?
3. Do the colors and aesthetics of the handout match the student's thinking?
4. Is there a suspense factor in their numbers and production?
   It is then executed permanently with spaces at the edges of the educational bulletin to put a frame sometimes and measure between (0.5- 1) cm in order to ensure the appearance of all the information contained in the educational bulletin.

Then the size of the pictures, drawings and shapes of the educational material shall be at least (1/4) height of the area allocated to the rectangle or square in which the educational material is to be displayed, and the height of the writing letter (1/20) cm of the height of the space allocated for the display of the educational material.

How to use effective teaching using educational bulletins:

1. Presentation of the full educational leaflet - The topics to be presented are presented sequentially.
2. Block view - Blocks a topic that is not intended to be presented with a layer of paper (light blocker) so that the content cannot be seen behind it and is gradually withdrawn, as it requires educational time.
3. Cumulative presentation - For example, when the human body is to be displayed as a picture, we can stick a piece of paper on it that matches the image of the human body with the circulatory system and then displays the heart and blood circulation in another so that it can be lifted in time after the end of the educational situation.
4. A display of transparent solid geometric pieces in the form of pockets that can be placed in place and uploaded at the end of the educational situation.
5. Display using electric current and colored lamps and this requires effort and careful work to illustrate, for example, the functioning of the bloodstream to and from the heart. Red and blue moving light.

Characteristics of good educational bulletins:

1. Clarity: The scientific material, drawings or pictures that it intends to display should be clear in terms of font, terminology, graphics and colors.
2. The art dimension: What is meant here is the art dimension in terms of drawing, color, shadows and estimating the distances between the edges of the educational bulletin.
3. The educational bulletin is not crowded with educational material.
4. To withstand external conditions such as heat, humidity, etc.

The effective use of educational bulletins in teaching: The following must be taken into account:

1. Preparing in advance of the handout, helps the teacher to prepare in advance of the lesson, and keeps him/her from going off topic, while saving time in writing using the board.
2. Ensure the accuracy of the information that will form the educational bulletin, as the steps of preparing it technically reveal any error in the scientific material.
3. Artistic output of the handout, design, drawing and directing, writing, and content, where the teacher can use students, or teachers with artistic abilities to draw and calligraphy, if his or her handwriting is not good, or unable to draw.
4. All educational materials, at various stages, can be subjected to technical preparation in the form of a good educational scientific bulletin.

5. Easy to use and attractive to display, it provides an atmosphere of excitement and follow-up by students.
6. The teacher should not deviate from the subject of the lesson while using the handout because it distracts the ideas of the students.
7. It can be stored in a special wallet or cover, so that it is stored well, allowing the teacher to use it several times and for many years.

|||UNTRANSLATED_CONTENT_START |||UNTRANSLATED_CONTENT_END|||

First : Arabic Studies: Al-Kilani Study (2001) : The study aims to (test the effectiveness of educational bulletins E5 Modified in achievement at the levels of students of the first grade of scientific secondary school in the public schools of the Directorate of Education in Irbid city in the subject of science, and the study sample consisted of two experimental groups of (39) students studied using educational bulletins with (39) students studied in the traditional way, and an achievement test was prepared from (40) multiple selection items, and the results of the study showed that there are no statistically significant differences at the first level of the levels of bloom, while there were statistically significant differences at the other five levels (absorption, application, analysis/ composition/ evaluation), as well as there were statistically significant differences in general achievement and in favor of the experimental group. (Kilani, 2001 : a-d)

Second: - Foreign Studies: Parker **Study (Parker, 2000):** The study aims to (study the impact of the effectiveness of educational publications as a development project in educational achievement and trends towards science among middle school students) who attended an academic enrichment program (strengthening) for a period of (5) weeks. The development project included the effective components: scientific content appropriate according to US national standards and educational goals of the states of Georgia, and the use of procedures for the effectiveness of educational publications in teaching. The study sample consisted of (11) African American students from the fifth and sixth grades, to attend a summer program from the countryside south of the state of Georgia, and an achievement test and a measure of trends towards science was prepared at the beginning and end of the program. The results of the study indicated an increase in the achievement of students participating in the programme and the development of their attitudes in science. (Parker, 2000. 236-246)

Chapter Three : Research Procedures

First: The research approach: The experimental approach was adopted in the research study, which is based on a deliberate and controlled change to the

specific conditions of an event, noting the changes in the same event and its interpretation (Epic 2006: 422)

Second: Experimental Design

Scheme -1 - Experimental Design of the Research Sample

group	Équivalence	The independent variable	Dependent variable
Experimental group	1. IQ 2. Educational Achievements for the previous year. 3. Prior information	Educational bulletins	Summative assessment
Control group		The usual way.	

Third: The research community and its sample

1. Represented the research community of fifth grade primary school students from Samaha Elementary Boys' School of Education in Baghdad Governorate/ Rusafa/1.
2. The first semester of the 2015/2016 academic year.
3. The first and second chapters of the first module in the book of science for the fifth grade primary. Animals and plants
4. The sample includes two divisions from the fifth grade primary (A), (B) and the number of students of the division (25). The sample was represented by the experimental group, which is studied along with the educational bulletins, and the control group, which is studied according to the usual method. The (5) failed pupils were excluded. Table (1)

Table (1) Distribution of students in the two research groups

group	Number of learners Pre-Exclusion	Number of learners Failure	Number of learners After Exclusion
Experimental group	28	3	25
Control group	27	2	25
Total	55	5	50

Fourth: Equivalence of the two research groups: Equivalence was performed for the two groups in the following variables: intelligence , testing of previous

information, and previous achievement. All were equivalent and as in the tables below :

Table (2) The arithmetic mean, variance, and the calculated fixed and tabular value of the scores of the two research groups in the intelligence variable

group	Sample size	Mean	Variance	Fair Value		Significance level
				Calculated	tabular	
Experimental group	25	24.87	76.18	0.33	2.021	Not significant
Control group	25	22.60	59.16%			

Table (3) The arithmetic mean, variance and fixed value of the scores of the two research groups in the previous information variable in the subject of science

group	**Sample size**	**Mean**	**Variance**	**Freedom degree**	**Fair Value**		**Significance level**
					Calculated	**tabular**	
Experimental group	25	13.45	4.58	48	0.018	2.021	Not significant
Control group	25	11.24	5.94				

Table (4) The arithmetic mean, variance, and the calculated fixed and tabular value of the scores of the experimental and control groups in the previous achievement variable in the subject of science for the fourth grade primary.

group	**Sample size**	**Arithmetic mean**	**Variance**	**Freedom degree**	**Fair Value**		**Significance level**
					Calculated	**tabular**	
Experimental group	25	74.35	145.89	48	0.224	2.021	Not significant
Control group	25	72.32	110.64				

Sixth: Research Requirements: 1- Study Material: The content of the material represented by Chapter (1/2) of the first module was specified in the Science Book for the fifth grade of primary school, 7/2015.
Chapter 1/ Animals , Chapter 2/ Plants .

2-Formulation of behavioral goals: After reviewing the content, (100) behavioral goals were formulated distributed in three levels of knowledge (recall, comprehension, and application). Table (5)

Table (5) Distribution of behavioral goals at the levels (remember, understand, apply)

Contents	Remembering 0.44	Comprehension 0.34	Applicability 0.22	Total
Animals	32	20	8	60
Plants	17	20	03	40
Total	49	40	11	100

3.Preparing teaching plans: In light of the content of the educational material and the behavioral objectives, (10) teaching plans were prepared for each group, and they were presented to a group of experts and arbitrators in the specialization of science teaching methods. Appendix (1)

4- Research tool: The two researchers prepared an achievement test, consisting of (20) paragraphs of a multiple selection type. Appendix (2) to measure the achievement of the experimental and control groups.

(B) Preparation of the test map: A test map was prepared to represent the validity of the sample of paragraphs for the objectives. Table (6):

Table (6) Test Map of Behavioral Objectives for Achievement Test

Terminations	No. of Quotas	Objectives Content Weight	Remembering 0.44	Comprehension 0.34	Applicability 0.22	Total 100%
Animals	6	50%	32	20	8	60
Plants	6	50%	17	20	03	40
Total	12	100%	49	40	11	100%

(C) The validity of the paragraphs: After the test was prepared in its initial form, it was presented to a group of arbitrators and experts specialized in the field of education, teaching methods, measurement and evaluation, and some paragraphs were amended, and all paragraphs received an agreement rate of (80%) and more.

(d) Drafting of achievement test instructions:1. Instructions for students : An instruction sheet was developed after preparing the test items and ensuring their validity, which will help students understand how to deal with the test. These instructions included how to answer them, the number of test items, and the number of alternatives to answer, which consist of (4) correct and three wrong alternatives.
2. Correction instructions: The correction of the test has adopted a special model as it gives one grade for the correct answer and (zero) for the wrong answer, while the abandoned paragraphs and the paragraphs that there was no reference to their alternatives are clear and the paragraphs that there was more than one reference to their alternatives have been treated as the wrong answer.

1. Application of the test:

(A) The first exploratory sample: The test was applied to a sample of fifth grade primary school students at Al-Nasr Elementary School and affiliated to the Baghdad Governorate of Rusafa/2 on 2/12/2015.

The sample consisted of (25) pupils. The average time taken to answer the achievement test paragraphs was calculated. The end time of the first pupil was monitored from the response to the achievement test paragraphs. The time was (35) minutes. When calculating the average time, it was (40) minutes, which is the response time to the achievement test. The paragraphs of the achievement test and its instructions were clear and understandable to all pupils.

(B) Applying the test to a second exploratory sample: The test was applied to a second exploratory sample on 25/12/2015 and consists of (80) pupils from Al-Rawasi Elementary Boys School and its purpose is to extract the psychometric properties of the test from the difficulty and strength of distinguishing each paragraph and the effectiveness of alternatives.

2. **Statistical analysis of the test items:** The survey sample test papers were corrected, and the scores were arranged in descending order, and (27%) of the number of students in the two groups were taken. The number of students in the upper and lower groups was (40) students. Difficulty coefficient, excellence coefficient and effectiveness of alternatives were calculated as follows:

(a) Level of difficulty of paragraphs: The paragraph difficulty factor refers to the percentage of correct answers to those paragraphs from students who have been tested. The higher the difficulty coefficient, the easier the paragraph is. The difficulty coefficient for each paragraph was calculated using the difficulty coefficient, and its value ranged between (0.33-0.78) Appendix (3)

(b) The strength of the paragraph distinction: it may be difficult for the paragraph to distinguish between pupils at the higher and lower levels by the characteristic it measures. When calculating the distinctive power of each of the test items, the item is considered acceptable or desirable. Annex (3)

(c) Effectiveness of alternatives: The ability of the wrong alternative in the selective paragraph to attract respondents from the low performance category to choose it. The more negative and large the attraction, the more attractive and effective the camouflage is. It is recommended to keep it in the paragraph. As for the camouflage whose attractiveness is zero or positive, it must be modified and developed or the right to replace it to be better able to attract a greater proportion of respondents from the low performance category (Al-Nabhan, 2004: 435). After using the formula of the effectiveness of alternatives on the upper and lower group scores, it appeared that the wrong alternatives attracted more students from the lower group than from the upper group. And so it was decided to keep it. (Al-Dulaimi and Adnan,2000: 75)

3. Test validity: It is intended that the test measures what has been set to measure it. To ensure the validity of the test, two types of validity have been adopted: apparent validity and content validity because they are among the most important types of validity in achievement tests:

(A) Apparent validity: It means the general appearance of the test in terms of the type of vocabulary, how it is formulated, its clarity, its suitability to the level of students, the clarity of its instructions, its accuracy and objectivity, and that the test paragraphs are consistent with the purpose for which they were set. (Esawi, 1998: 45)

For this purpose, the test paragraphs were presented to a group of experts and arbitrators with jurisdiction to express their views and suggestions on the validity of the paragraphs.

(b) **Content validity:** It is called content validity. It relates to judging the adequacy of the test vocabulary as a sample representative of the scope of content or objectives that the test is supposed to measure, and it is highly suitable for achievement tests (Allam, 2006: 107). Accordingly, a test map was prepared, table (6). To ensure that the test items are linked to achieve the content of the educational material and thus the test is honest.

4. Stability of the test (Al-Momani, 2002 : 86)

The value of the stability of the test was (0.83), which is a good and acceptable value. If the stability coefficient rises from (0.75) or more, it is evidence that the stability is high. Appendix 5:

Seventh: Statistical means have been used the following statistical means:

1. **T-test:**
2. **Cooper's equation.**
3. **Difficulty coefficient equation.**
4. **Discrimination index**
5. **Effectiveness of alternatives .**

Chapter Four : Research Findings and Recommendations

First: Presentation of the results : This chapter includes a presentation of the research results and their interpretation according to the research variables and hypothesis as follows:

1. **Results related to the hypothesis:** In order to ensure the achievement of the research objective, the validity of the hypothesis was tested (there is no statistically significant difference at the level of significance (0.05) between the average scores of the experimental group students who studied according to the educational bulletins, and the average scores of the second group students who studied according to the traditional method in the achievement test. The mean and variance were calculated for the scores of the students of the experimental and control groups. Using the T-test for two independent equal number samples, the calculated T-value was found. Table (7)

It appeared that the arithmetic mean of the scores of the experimental group was (31.51) and a variance of (27.62), while the arithmetic mean of the control group's scores was (22) and a variation of (18.66). The calculated T-value was (6.26), which is greater than the tabular value of (2.021) at the level of significance (0.05) and with a degree of freedom (48).

Table (7) The arithmetic mean, variance, calculated and tabular value of the scores of the experimental and control groups in the achievement test

group	Number	Arithmetic mean	Variance	Freedom degree	T value		Significance level
					Calculated	tabular	
Experimental group	25	31.51%	27.62	48	6.26	2.021	Function
Control group	25	22	18.66				

Accordingly, the zero hypothesis is rejected because there is a statistically significant difference when the significance of (0.05) is included between the average scores of the experimental group's students who studied according to the educational bulletins and the average scores of the control group's students

who studied according to the usual method and in favor of the experimental group.

Second: Interpreting the results : The results showed a statistically significant difference between students of two groups in the achievement test and in favor of the experimental group, and this indicates that:

1. Educational bulletins are highly effective in increasing the achievement of students in the fifth grade of primary school, and this is consistent with the following trends in the teaching of science, where the student can link the information presented to him through educational bulletins and his participation in them is highly positive.
2. Organizing the students' experiences and needs while organizing the content of the material so that it is easy for him to represent it well through the drawings, lines and colors in which it was used and make the lesson more fun and interesting.
3. Facilitate the process of linking key information and curricula and save them quickly, which increases their educational level and academic achievement.
4. The acquisition of skills by students helped discover information and knowledge to solve the problems presented in the lesson, and thus students have a high desire towards science.
   In summary, teaching according to the educational bulletins encourages freedom to ask questions, discuss and participate positively during the lesson, which indicates an increase in desire and impulse towards learning science and this increases their academic achievement.

Cluster III Conclusions

1. The effectiveness of educational bulletins was higher than the normal method, as they had an effective impact in raising the level of achievement among students.
2. It makes it easier for the teacher to make his plans clearly and sequentially and save effort.
3. Activate students' knowledge through integration and development of information so that it is easy to retrieve and memorable.
4. Increasing the desire and impulse to learn the sciences through interaction between pupils and the teacher in interpreting the phenomena.

IV. Recommendations : To complement this discussion, a number of recommendations are made :

1. The need to use educational bulletins as a type of educational activities and modern techniques in teaching because of their impact on the preservation and retrieval of information in a timely manner.
2. Preparing educational cadres and pioneers of educational bulletins to form a great skill in preparing them for the teacher before explaining the subject with the help of students and teachers.

Fifth: Some proposals emerged from the results of the research obtained :

1. The impact of the effectiveness of educational bulletins as educational activities on creative, reflective and innovative thinking.
2. Conducting similar studies for different stages of study.
3. Conducting studies of several variables such as scientific achievement and thinking or innovative, critical and analytical.

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