

Study the Impact of Science Fiction E-stories effectiveness on Achievement and Learning Speed in Science Subject for Intermediate Grade students: Case Study on Intermediate Grade Schools in Saudi Arabia



Suad Abdullah Al Harthy, Iman Salah

Information Science Dep.,KAU,Jeddah,Saudi Arabia

E-mail:soso_ml299@hotmail.com

ABSTRACT

This study aims to measure the impact of science fiction e-stories effectiveness on achievement and learning speed in Science subject for intermediate grade students. The importance of this study lies in providing a new way depending on science fiction e-stories in science subject that fosters students' achievement because stories remain alive in memory and it is not easy to forget them especially if they are associated to fiction. These stories also lead to learning speed because there is a tremendous amount of science can be learnt in a short time with greatest pleasure and great benefit as well as they benefit teachers and encourage them to use modern educational methods. This study serves those concerned to construct and develop curricula in Ministry of Education with respect to the reformulation of the content of science subject for intermediate grade in the light of science fiction stories. There are two approaches were used to proceed with the study problem, descriptive analytical approach is one of them. This approach study is a description of phenomena or facts to reach to generalizations and conclusions enabling us to develop the reality we teach. The second approach is a quasi-experimental approach that is used in educational studies. These studies aim to knowledge, testing and examining of the casual relationship. Thus, they are not limited to description and diagnosis of relations but also they examine the relationship and make sure of its validity or falsity through this testing. Study sample consisted of (60) students in the first grade and they were divided into two groups: the experimental group consisting of (30) students and the control group consisting of (30) students. The experimental group applied science fiction e-stories designed by the researcher in lessons of digestive system and nutrition in science subject - the first intermediate grade -, achievement test and learning speed test and conclusions showed that students of experimental group surpassed their peers in the control group in the average scores of achievement test. This test was statistically significant with a value of (28.8). Those students also surpassed their peers in the control group in the grades average of the learning speed test and this test was statistically significant with a value of (19.3).

Keywords: Science Fiction, Stories, Science Fiction Stories, Science Fiction Stories, Learning Speed.

1. INTRODUCTION

The importance of science fiction lies in the development of innovation, knowledge and the intermediate grade represents the stage of imagination growth for student, so there is a need to renew some recent ways depending on moving of student imagination using lovely way for them. This way is science fiction e-stories that are commensurate with the requirements of science subject now.

Study [5] suggested that the imagination level of students was not satisfactory to the extent that is expected from the arrival of students to creativity and innovation. The curricula of science subject do not contribute in growth of science fiction of students. Author [6] pointed out that most of curricula free from science fiction and they do not give students chance to practice die to time constraints, lack of capabilities and classes density. In this article, we try to find an answer to this question: what is the impact of science fiction e-stories effectiveness on achievement and learning speed in science subject for intermediate grade students? What is the effectiveness of perception proposed of science fiction e-stories in science subject on achievement and learning speed for intermediate grade students? Therefore, we depended on descriptive and quasi-experimental approaches which were applied on lessons of digestive system and nutrition in science subject for the students in the middle first grade (female students) in the second semester of the academic year 2009- 2010. Intermediate grade schools were chosen and the sample study consisted of (60) students in the first grade; they were divided randomly into two groups: the experimental group consisting of (30) students and the control group consisting of (30) students. The researcher used two types of tests, namely: a cognitive achievement test, which is an objective test, and an electronic test depending on time to measure the learning speed. Also, we used two of science fiction e-stories. The assumptions we sought to test their validity are: (1) There are statistically significant differences at the significance level (0.05) between the average scores of the experimental group students and the average scores of the control group students in summative assessment of

achievement test for the benefit of the experimental group students. (2) There are statistically significant differences at the significance level (0.05) between the average scores of the experimental group students and the average scores of the control group students in summative test to test the learning speed to investigate the benefit of the experimental group students. (3) There are statistically significant differences at the significance value of (0.05) between the average scores of the experimental group students in formative and summative assessment of achievement test to check the benefit of the summative assessment. 4. There are statistically significant differences at the significance level (0.05) between the average scores of experimental group students in summative assessment to test the learning speed for the benefit of the summative assessment. The main findings that we have been achieved suggested that experimental group students have already surpassed the students of the control group at the average scores of the achievement test. This surpass was statistically significant with a value of (28.8), furthermore they surpassed their peers of the control group at the average scores of the learning speed test and this surpass was statistically significant with a value of (19.03).

2. THE RELATED WORKS

The Science fiction is important in updating methods of teaching science subject as well as attracting students' interest in learning. The science fiction stories seek to develop the ability to conceive how things be in the future or how they were in the past by using a method that makes the student think creatively. Therefore, the preceding studies sought to find out about the reality of using science fiction stories in teaching, its effectiveness and training of teachers on using these methods in classrooms the following studies:

The study of (Soha ElShaf'ey, 2000) given by, through ,it ,the author explained the reality of using science fiction in teaching in the classroom. She trained teachers on using science fiction stories inside the classroom, and students on using innovative thinking. The study sample selected by the researcher was from third preparatory school students, which is an important period to develop their innovation. The statistically significance differences between the average scores of the experimental group students and the average scores of the control group in testing the ability of thinking creatively was for checking the benefit of average scores of the experimental group students. This studies is necessarily recommended using science fiction stories in the classroom to develop the student's innovation.

Study of (Bucher, 2001) was done to he train the teachers on using the science fiction in the classroom as he prepared the teacher manual that includes the definition of the science fiction and its inception, importance, subjects and clarifying how it can be used in the class room. The study was applied

on sample of the secondary stage teachers. The study reached increasing of awareness of secondary teachers by methods of using the science fiction in the class room and the importance of the science fiction in the class room. The searcher recommended using the science fiction in teaching in the class room, but in our point of view, we see that the best stage for developing the fiction is the intermediate stage due to distinguish the characteristics of students in it with feverish, motivation, vitality and love of adventure as well as the fertile imagination.

Study of (Lornas, 2002) encouraged the students on thinking about the future and test their capabilities to adventure. The searcher prepared a program consists of twenty science fiction stories of various writers and applied the program on the seventh class students. This study reached that the increase of cash queens of students can develop their creative thought depending on using science fiction stories in teaching and this what is agreed with our current study which try to develop the creative thought of students through science fiction stories. The searcher recommended using the programs that contain science fiction stories and teaching the students the same.

Study of (Sally, 2002) aimed to develop a creative writing through science fiction of the intermediate students. In our point of view, we see that this study selected the appropriate and fertile stage with imagination and love of adventure; and it is important to concern with development this aspect. For achieving that, the searcher prepared a set of lessons and it is applied on the sample of study and discussing the students about it with training them after the end of each lesson. The study results reached that every student can write his\her story and encourage him\her on writing science fiction stories. The study recommended supporting and encouraging students on the creative writing through the search for all methods through which can help the students to develop their science fiction. In our point of view, we see that creation can be achieved through science fiction stories that can help the students to authorship and creativity.

Study of (Eman Mahmoud, 2008) contributed in employing science fiction stories in developing some skills of linguistic creativity of first- grade preparatory. The searcher used science fiction stories that appropriate with the study of students and list skills of linguistic creativity relevant to science fiction. The most important results that the searcher reached are the effectiveness of the program in developing the skills of linguistic creativity relevant to science fiction of first- grade preparatory. The searcher recommend reading books with science fiction stories associated with some of values, noble behaviors, relevant to the linguistic creativity and concerning with activities and methods that activate the fiction of student in the education process, considering that the fiction is a main element of creativity elements and enrich the school's library with science fiction stories. This

what is agreed with our current study in clarifying effectiveness of science fiction stories, especially on students of preparatory stage.

Study of (Imad Al-Zahrani, 2008) designed an effective electronic programming tool for curriculum of education techniques to measure their effects on the academic achievements. That study is applied on students of teacher college and the searcher used a system of director to design the programming where that program is characterized by simplicity in dealing and strengthen in design. The programming was designed in three educational units by the searcher. The Number of the sample is 20 students and it is supposed to increase the number of the sample. The searcher used two tools in his study which test the knowledge achievements and test the skillful achievements. Results of the study ascertained that the experimental group exceeds the control group. The searcher recommended with not limiting to pattern of traditional lectures which focus on the theoretical aspects more than the practical aspects and employing other educational patterns achieved through the integration of modern technological innovations achieved through them the balance between the theoretical and practical aspects which lead to increase of students learning levels and acquire the correct educational concepts.

3. PROBLEM FORMULATION

The current used methods in the Science subject almost free somewhat of raising the student fiction. The searcher noticed through the reality that she faced during the work in teaching, decreasing of the students achievements levels and their frequent complaints of getting bored from the study because of memorization and lack of diversity in methods of Science subject. The traditional curriculum of Science subject for the intermediate stage does not meet the needs of the students from the aspect of mental activity and move the fiction where it lacks to interesting elements which lead to students boredom from the classes, their dropout and weakness of their desire in learning and achievements. The science fiction has an important in developing the creativity, innovation and knowledge considering the intermediate stage is a growth stage of the fertile imagination of the student. Therefore, the need arises to develop a new methods depend on movement of the fiction of the student by using a lovely method which is science fiction E- stories that compliance with requirements of Science subject in the current time. That study sought to the following main Question: what is the effect of science fiction E- stories effectiveness on the achievements and the learning speed in the Science subject of the intermediate stage? This question branches into a number of questions such as: what are the standards of science fiction E- stories in the Science subject of the intermediate students? What is the proposed imagination of science fiction E- stories in the Science subject to development the achievements and the learning speed of the intermediate students? What is the

effectiveness of the proposed imagination for science fiction E- stories in the Science subject on the study achievements for the intermediate stage? What is effectiveness the proposed imagination for science fiction E- stories in the Science subject on the learning speed for the intermediate stage?

4. THE PROPOSED RESEARCH METHODOLOGY

The searcher used the descriptive approach to analyze in content of the digestive system and nutrition lessons from the Science book of the intermediate first- grade – the second term, as well as specify requirements using of science fiction E- stories. The searcher used this curriculum in the describing overall literature and the previous studies for the search subject as well as quasi-experimental curriculum to measure the effect of the independent variable effectiveness (science fiction E- stories) on the dependent variables (achievements and learning speed) based on designing two groups one of them is a control group and the other is an experimental group and implementation the formative and the summative test on both of two groups and specify the arithmetical averages and the standard deviation of them. The searcher designed and implemented tools of the formative and summative study according to quasi-experimental curriculum for two groups of the intermediate first grade students with the implementation of the formative and summative, one of them formed the experimental group while the other formed the control group. The digestive system and nutrition lessons have been taught the experimental group by a method of science fiction E- stories and measurement their effectiveness on the school achievements and learning speed of the students while the control group has been taught with the traditional method. The community of search included all the intermediate stage students at Jeddah schools in Saudi Arabia and they include sample of the search (30) students of the intermediate first- grade. They are selected by a random manner which is the experimental group that study science fiction E- stories and (30) students representing the control group that are taught by the traditional method, then the searcher prepared two tests which are an achievement test to measure the students' achievements and an electronic test (multiple-choice) depends on time factor to measurement the learning speed.

5. The Statistic Results and the Discussion

Our study sought to verify the effectiveness of the science fiction E- stories effect on the achievement and the learning speed with the Science subject for the intermediate first-grade students after implementation of the study tools on sample of the study. The necessary statistic methods that were used are: deductive statistical techniques represented in T-test which is a test used to detect the significant of differences among middle of two samples and it is used for the significant of differences among middle of two independent and equal samples in the number, as well as the

differences between middle of two associated and equal samples in the number. Eq.(1) has been used for measuring the effectiveness of science fiction E- stories and the learning speed with the Science subject for the intermediate first- grade students through the following equation:

$$\text{The effectiveness} = \frac{R - O}{D - O} \quad (1)$$

Where R represents the average of students degrees in the summative assessment, O is the number average of students degrees in the formative assessment and D is the final degree of test. The statistical process is carried out by using Statistical Package for the Social Sciences (SPSS) which assisting to secure speed and accuracy in statistical analyses. The results indicate that the researcher tested if the first assumption is right, which states, "there are statistically significant differences in the significance level (0.05) between the grade averages of experimental group students and grade averages of control group students in summative assessment of achievement test for the benefit of the experimental group students." Thus, the results were as shown in Table No. 1, as follows:-

Table. 1 The grades of experimental and control groups` students in the summative assessment of achievement test

Group	Sam ple No.	Calcul ation Averag e	Stand ard Devia tion	Free dom Degr ees	Val ue (T)	Signific ance Level
Experim ental	30	28.8	1.71	58	9.3 8	0.00
Control	30	20.5	4.76	58	9.3 8	0.00

Table. 1 shows that there is a statistically significant difference between the average grade of experimental group students and the average grade of control group students in summative assessment of achievement test for the significance level (0.05), for the benefit of the experimental group where (T) value is calculated to be(9.38) when freedom degrees equals (58) which is the statistically significant value. The average grade of experimental group students are (28.8), i.e. more than their average grade of control group students which are (20.5), this refers that the cognitive achievement level of experimental group students in summative assessment (achievement test) is high after the application of experiment. Moreover, the researcher tested if the second assumption is right, which states, "there are statistically significant differences in the significance level

(0.05) between the average grade of experimental group students and average grade of control group students in summative assessment of learning speed test for the benefit of the experimental group students." Thus, the results were as shown in Table. 2, as follows:-

Table. 2 The grade results of both experimental and control group students in summative assessment of learning speed test

Group	Sam ple No.	Calcul ation Averag e	Stand ard Devia tion	Free dom Degr ees	Val ue (T)	Signific ance Level
Experim ental	30	190.33	1.18	58	9.3 8	0.00
Control	30	13.26	3.15	58	9.3 8	0.00

Table No. 2 shows that there is a statistically significant difference between the average grade of experimental group students and the average grade of control group students in summative assessment of learning test for the significance level (0.05), for the benefit of the experimental group where the (T) value calculated is (9.38) when freedom degrees (58) which is the statistically significant value. The average grade of experimental group students are (19.03), i.e. more than their average grade of control group students which are (13.26), this refers that the learning speed level of experimental group students in summative assessment (learning speed test) is high after the application of experiment, i.e. we should accept the assumption which states, " there are statistically significant differences between the average grade of experimental group students and average grade of control group students in post-learning speed test for the benefit of experimental group." Moreover, the researcher tested if the third assumption is right, which states, "there are statistically significant differences in the significance level (0.05) between the average grade of experimental group students in both formative and summative assessments of achievement test for the benefit of the achievement test." Thus, the results were as shown in Table. 3, as follows:-

Table. 3 The grade results of experimental group students in both formative and summative assessments of achievement test

Assess ment	Sam ple No.	Calcul ation Averag e	Stand ard Devia tion	Freed om Degr ees	Val ue (T)	Signific ance Level
Format ive	30	9.06	5.00	29	27. 68	0.00
Summa tive	30	28.8	1.71	29	27. 68	0.00

Table. 3 shows that there is a statistically significant difference between the average grade of experimental group students in both formative and summative assessments of achievement test for the significance level (0.05), for the benefit of the achievement test where the (T) value calculated is (-27.68) when freedom degrees (29) which is the statistically significant value. The average grade of experimental group students in summative assessment are (28.8), i.e. greater than their average grade in formative assessment which are (9.06). This refers that the cognitive achievement level of experimental group students is high after the application of experiment, i.e. we should accept the assumption which states, "there are statistically significant differences between the average grade of experimental group students in both formative and summative assessments of achievement test for the benefit of summative assessments." Moreover, the researcher tested if the fourth assumption is right, which states, "there are statistically significant differences in the significance level (0.05) between the average grade of experimental group students in both formative and summative assessments of learning speed test for the benefit of the summative assessment." Thus, the results were as shown in Table. 4, as follows:-

Table. 4 The grade results of experimental group students in both formative and summative assessments of learning speed test

Assessment	Sample No.	Calculation Average	Standard Deviation	Freedom Degrees	Value (T)	Significance Level
Formative	30	8.20	2.60	29	13.61	0.00
Summative	30	19.03	1.18	29	13.61	0.00

Table. 4 shows that there is a statistically significant difference between the average grade of experimental group students in formative assessment and summative assessment of learning speed test for the significance level (0.05), for the summative assessment where the (T) value calculated is (-13.61) when freedom degrees (29) which is the statistically significant value. The average grade of experimental group students in summative assessment is (19.03), i.e. more than their average grade in formative assessment which is (8.20), this refers that the learning speed of experimental group students after application of the experiment, i.e. we should accept the assumption which states, "there are statistically significant differences between the average grade of experimental group students in formative assessment and summative assessment of learning speed test for the summative assessment." To measure the effectiveness of science fiction e-stories for

achievements gained in the subject of Science for students in the first intermediate grade, the researcher used the average grade of experimental group students which previously calculated in the formative assessment and summative assessment for the achievement test. Thus, the results were shown in Table. 5, as follows:-

Table. 5 The effectiveness of science fiction e-stories for achievements gained in the subject of Science for students in the first intermediate grade

Measured Parameter	Formative assessment	Summative assessment
Calculation average	9.06	28.8
Final grade	30	
Effectiveness	0.94	

To measure the effectiveness of science fiction e-stories for achieving the gain in the subject of Science for students in the first intermediate grade, the researcher used the average grade of experimental group students which previously calculated in the formative assessment and summative assessment for the learning speed. Thus, the results were shown in Table. 6, as follows:-

Table. 6 The effectiveness of science fiction e-stories for achievements gained in the subject of Science for students in the first intermediate grade

Data	Formative assessment	Summative assessment
Calculation average	8.20	19.03
Final grade	20	
Effectiveness	0.92	

The above research results in Tables [1-6] generally reveal that there is an effectiveness of science fiction e-stories for achievements and learning speed in the subject of Science for students in the intermediate grades, i.e. there were statistically significant differences between the average grade of experimental group students and the average grade of control group students on post-achievement test for the benefit of the experimental group students. It was also found that there were statistically significant differences between the average grade of experimental group students and the average grade of control group students on student post-speed test for the benefit of the experimental group students. Finally, it was found that there were statistically significant differences between the average grade of experimental group students on the formative and summative assessments for achievement test for the benefit of the post-achievement

test. It was found that there were statistically significant differences between the average grade of experimental group students on the formative and summative assessments for learning speed test for the benefit of the post-learning speed test. This result could be interpreted in the light of the following considerations: the method of introducing the content in the methodology of science fiction e-stories which was presented in separate parts, in order to allow the student to re-study each part more than one time easily. Moreover, there were variable content ideas, and the content included many multimedia ideas of texts, pictures and nice cartoon movies. The content was transformed to science fiction story which make the students have fun and interested in know the end of story, thus, they were more attentive and concentrated.

6. CONCLUDED COMMENTS, AND FUTURE WORKS:

The researcher discussed the effectiveness of science fiction e-stories achievement and learning speed in the subject of Science for students in the first intermediate grade, and the researcher used science fiction e-stories, then apply them to the students in the first intermediate grade. The author found that the experimental group students have beaten all of their peers in the control group in the average grade of achievement test. Such excellence was a statistical significant. They have also beaten all of their peers in the control group in the average grade of learning speed test. Such excellence was a statistical significant. Therefore, there was an effectiveness of science fiction e-stories for achievements and learning speed in the subject of Science for students in the intermediate grades. The researcher recommended the Ministry of Education for production of science fiction e-stories and distribution of them among educational institutions, as a modern educational technique, and train the female teachers to produce science fiction e-stories which should be included in the curriculum of Science. Also, to organize seminars on the importance of science fiction e-stories in the modern age and their role in the development of learning speed. The researcher also presented some suggestions including carrying on a similar study which contains more samples and educational areas in order to distribute of this study findings, and to make a study on assessment of science fiction e-stories in the light of the requirements of modern age sciences, as well as performing more research on the effectiveness of a suggested program for science fiction e-stories in the subject of Science, for getting more creativity and innovation for the students in intermediate grade.

REFERENCES

1. Al-Shafee, Suha Imad Al-Deen. (2007), "**Effectiveness of using Scientific-fiction Stories in Science Teaching on Developing Creative**

- Thinking" (MA) Al-Shafee, Suha Imad Al-Deen, , College of Education, Mansoura University.
2. Al-Zahrani, Imad Jumaan Abdullah. (2007) "**Designing and Application of an Electronic Interactive Software for Curriculum of Education Technologies to measure its Effect on Learning Progress for Teachers College Students**", (MA), College of Education, UMM AL-QURA UNIVERSITY.
3. Bucher, T. (2001), "**Bringing science – Fiction into the classroom**", English Journal, V28 n2 p 41- 45.
4. Lornas, D. (2002), "**Science Fiction and the future**", contents of curriculum unit 87 Journal of Research in ERIC.
5. Mahmoud, Iman Abdullah Ahmed. (2008), "**A program for developing Linguistic Creativity by Stories of Scientific Fiction for pupils of first grade of Preparatory**", (MA), College of Education in Damyaat, Mansoura University. Browsed in 4th/2/2010 . www.eulc.edu.eg/eulc/start.aspx?fn
6. Rashed, Ali. (2010), "**Developing Creativity & Scientific Fiction for Children of Pre-school, Primary and Preparatory stages**", Dar Debono, Oman.
7. Sally, O. (2002), "**Introduction to Creative Writing**", U.S.