Multi-Knowledge Electronic Comprehensive Journal For Education And Science Publications (MECSJ)
ISSUE (27), December (2019)
ISSN: **2616-9185**
www.mecsi.com

The Effect of E-Portfolio on Development of Reflective Thinking and Academic Achievement among Second Year Secondary School Students

Fawziah Muidh Yahya Alqahtani
Educational Supervisor
fwzeah@live.com
fawziah@jedu.gov.sa

Abstract

The aim of this research is to reveal the effect of the electronic achievement file (E-Portfolio) on the development of reflective thinking and academic achievement among second year secondary school students in the computer course, in a sample of (40) second year secondary school students, divided into two groups (20 students) and the control group (20 students) using the semi-experimental method, and the reflective thinking scale and the achievement test were applied later to the experimental group, and using (T-Test) results showed that there are statistically significant differences between the group Experimental and control group in favor of the experimental group This is due to the use of the electronic achievement file (E-Portfolio). Paper image of the achievement file to the electronic, in addition to providing the Internet in schools and enable students to connect to them in accordance with appropriate controls and the provision of sophisticated computers (laptops - iPad) through which to connect to the Internet and download programs and obtain the necessary electronic materials.

Keywords: E-Portfolio, Reflective Thinking, Computer.

Introduction:

Significant technological advances have profoundly changed and influenced all areas of life, extending it to the academic field, thereby transforming it in quality in education. Educators have begun to develop educational goals to match this progress and are looking for the means and techniques that lead the educational process to achieve its goals.

E-Portfolio is one of these technical means that has attracted the attention of educators, it is an objective tool to evaluate the performance of learners and learn new knowledge and follow them and give them a lot of skills, and the ability to think and solve problems, and the fact that the electronic achievement file depends on Using it on the computer has allowed learners to compile, organize and present their work in the form of multimedia such as text, graphics, sounds and video scenes, which are used to achieve certain objectives. Greenberg (2004, Greenberg) states that the e-achievement file is not only a set of technical and multimedia applications, but must be available on the Internet. The e-achievement file is a web application provided by the author as well as the ability to manage and organize files created using different applications. And control access, discussion and access.

The most important characteristic of the e-achievement file is two distinct attributes: selectivity and contemplation. His performance Constantine and Lorenzo (2004).

Dietz & Wolf (1998) defines the types of electronic file in three types: an education file that is used to encourage the learner to learn and enhance their meditative thinking, a recruitment file that gives data and information about the individual when applying for a job, and finally a calendar file that uses to evaluate the learner in a course or group of courses.

Research problem:

The research problem has crystallized due to the weakness of the general education in the use of technological innovations in general and the lack of interest in using the electronic achievement file in particular as a particular tool for the teacher to follow up the students and provide feedback and use it as a tool to document the work and accumulate experiences.

The sense of the problem resulted from the observation of the researcher of this deficiency in the use of electronic achievement file despite the advantages of upgrading the educational process and its role in the development of higher-order thinking skills, the most important of which is reflective thinking.

The current research problem is to answer the following key question:

What is the effect of the electronic achievement file on the development of reflective thinking and academic achievement of second year secondary school students in the computer course?

- Search Questions:
- What is the proposed perception of the components of the electronic achievement file in the computer course for the second semester of the second grade secondary?
- Is there an impact of the study using the electronic achievement file on the reflective thinking of the second year secondary school students in the computer course?
- Is there an effect of studying using the electronic achievement file on the academic achievement of second grade students in the computer course?

Research hypotheses:

1. There are no statistically significant differences at the significance level (0.05) between the average scores of the experimental group students who used the electronic achievement file and the average scores of the control group that was exposed to the normal teaching method.
2. There are no statistically significant differences at the level of significance (0.05) between the average performance of the students of the experimental group that used the electronic achievement file and the average performance of the control group that was exposed to the normal method of teaching for the scale of reflective thinking.

Research aims:

1. Identify the impact of the study using the electronic achievement file on the reflective thinking of the second year secondary school students in the computer course.
2. Identify the impact of the study using the electronic achievement file on the academic achievement of the second grade students in the computer course.

Research importance:

- The importance of the research stems from the importance of electronic achievement files and their prominent role in the educational process. It is hoped that this research will lead to the following:
- Assist teachers and specialists in the field of computer to take advantage of the technology of electronic achievement file and follow up the achievement of students and the development of their performance.
- Introduce a technique that enhances the student's self-assessment and helps them learn about their strengths and weaknesses.
- Employing modern technological techniques in education and inviting teachers and students alike to raise their computer skills.
- Try to raise the level of reflective thinking, which is one of the higher levels of thinking through the use of electronic achievement file.
- The Ministry of Education based on the results of this research and trying to take advantage of it to generalize and adopt it in secondary schools in all subjects and provide what is necessary not success and overcome obstacles.

Research limitations:

- Objective limits: The research was limited to the subject of technologies and programming of smart devices.
- Time limits: the second semester, the academic year 1435/1436
- Spatial Boundaries: The application of research in one of Jeddah's public schools for secondary school
- Human Frontiers: Second grade secondary students

Research terms:

Electronic achievement file: A student's work file in which a purposeful and organized collection of the student's work and achievements over a certain period of time is reviewed, in the light of specific criteria to judge the degree of achievement of the desired standards.

The electronic achievement file includes samples of the student's writings and articles, the sources of knowledge he has seen, and some reports that include summaries of performance research, experiments, activities or individual and collective projects he has carried out. Training Course (Elbaz and Elsayed, 2008).

Reflective Thinking: A mental process based on analyzing the problematic situation into a set of elements, examining all possible solutions, evaluating and validating them before selection, or finding the correct solution to the problematic situation (2005, Abraham).

Theoretical framework and previous studies

First: Electronic achievement file

The concept of electronic achievement file:

Qutait (2012) defined it as a continuous compilation of the work accomplished by the student. This file includes a set of works produced by him, as well as materials that illustrate the stages of production of these works, and the descriptive summaries of some of the works, and the level of achievement achieved by the student.

Constantine and Lorenzo (2004) see it as a "careful selection of a set of model documents that focuses on the learner's best work and achievements." Different (audio, video, graphical and textual), and uses electronic breaks Links instead of paper breaks, and published on the Internet or CD."

The National Educational Association defines the E-Portfolio as a "learning record that focuses on students' work and their intellectual reflections on their work.

The importance of using the electronic achievement file of Abu Mutlaq (2012):

Promoting self-evaluation, self-confidence and reflective thinking. It also promotes active learning, love of cooperation and participation, in addition to increasing the student's interest in modern technological techniques in the use of computer and its various programs to show their profile in a better and more diverse way to use multimedia.

Components of the student's electronic achievement file:

This difference between the contents of the electronic achievement file is due to the steady technical development, the target audience, and the philosophy of the person in the organization.

Al - Mufarej and others (2006) stated that "the development of the achievement file is a process that involves many challenges and there is no recipe ready. Every teacher has to develop and develop the items contained in the achievement file and its evaluation criteria."

The E-Portfolio file usually contains a profile of the student, an index of the contents of the file and samples of the student's work showing his performance by the various assessment tools and the contributions he made in the educational activities. It also includes the student's completed works as well as materials that reflect the way in which these work was done, such as the various drafts prepared by the student before arriving to work in its final form or a brief description of the stages of the work and its role, especially in collective work, in addition to his reflections and select the best achievements and placed within File.

The importance of the electronic achievement file for the computer course:

The electronic achievement file is an appropriate way to display and compile computer projects of an electronic nature. The computer course requires reviewing some websites or downloading some programs that are easy to view and link to the electronic achievement file. The electronic achievement file is a good model for the positive use of technology and the Internet.

Some of the most important studies related to the electronic achievement file include the following:

Mohammedi (2014) conducted a research aimed at identifying the effectiveness of the electronic achievement file (E-Portfolio) in the acquisition of some scientific concepts prescribed in biology for the second grade secondary, with a conceptualization of the most important criteria that should be available in the electronic achievement file, and the research reached to the existence A statistically significant difference between the mean of the experimental and control group in the telemetry and the average performance in favor of the experimental group. Al Harbi study (2011) also aimed to know the effect of evaluation using achievement files on motivation for achievement and academic achievement and its cognitive levels in second grade students.

The results indicated differences between the experimental and control group in the motivation for achievement and academic achievement for the experimental group.

In the study of Al-Otaibi (2013) linguistic activities related to electronic achievement files for the development of writing skill in English language for the preparatory year students level II, and to investigate the impact, has resulted in the presence of statistically significant differences between the average scores of the experimental and control group, and the performance of the two groups in Post-writing test for the experimental group. The study of Abu Mutlaq (2012) sought to identify the effectiveness of using the electronic achievement file for the development of teaching competencies among female teachers at the Faculty of Education. Al Barakati study (2008) aimed to reveal the effectiveness of using the achievement file on the performance of mathematics students in the course of designing the activity in the educational preparation program at Umm Al-Qura University. In addition, there are no statistically significant differences between the averages of the evaluation of both (students in the study group in the achievement file for themselves and the researcher and their colleagues in completing the overall achievement file). The Wade Yarbrough study (1996, & Wade Yarbrough) recommended the use of achievement files in teacher preparation programs with a focus on students' understanding of the purpose of using it, encouraging students to express individuality, evaluating student responses through the achievement file. Ayan and Seferoğlu's study (2011, Ayan a & Seferoğlu) revealed the role of e-achievement file in developing reflective thinking among teachers of English language students in Turkey. The data was collected through what was recorded in the e-achievement file in addition to personal interviews with Student teachers. The study found that the electronic achievement file gave participants a sense of confidence, promoted reflective thinking, confirmed the concept of collaboration and allowed the link between theories and practice.

Second: Reflective thinking

The concept of contemplative thinking: The idiomatic definition of meditation in language is: contemplation and contemplation. In terms of terminology in the field of education, the term meditative education refers to the elements and steps of mental experience received by the learner, in the sense of mental and emotional acts by individuals engaged in discovering their experiences in order to reach a new understanding (2014, Abu Amsha).

John Dewey defined meditation as a view of beliefs in an effective, consistent, and contemplative way, or as a form of presumed knowledge based on supportive ground and expected outcomes (2011, Alasarah).

Reed & Canning (2010) sees a kind of thinking that differs from other processes called thought, and includes uncertainty, hesitation, confusion and a mental difficulty to think, do research, and find materials that can be solved. This uncertainty is conducive to stability and the elimination of turmoil.

There are several educational tools through which the student can practice meditative thinking.

Essay writing, procedural research, group discussion, self-assessment, achievement file Reflective thinking should be central to the curriculum and the teacher must consider several things to make this work:

Give students enough time to think before asking them to answer questions and focus on testing a few topics, not just the formal coverage of many of them, and making students clarify and justify their opinions, as well as students to produce original and unconventional ideas during the interaction (2005, Ibrahim).

Among the most important previous studies related to reflective thinking is the following:

Al Harithi's study (2011) aimed to investigate the effect of enhanced discussion with the previous questions on the development of reflective thinking in the science course for first grade middle school students. The study found that there are statistical significant differences between the average of post test scores and the level of meditative thinking skills for the experimental group. The study of Abu Awwad and Ayyash (2012) aimed to investigate the impact of the strategy of reciprocal teaching in the achievement of ninth grade students in the subject of biology and the development of their reflective thinking. The control group on both the academic achievement tests in science and the reflective thinking scale for the benefit of the experimental group students. The aim of Qatrawi study (2010) to the effect of using a strategy similars in the development of science processes and skills of basic thinking contemplative in the science of students in the eighth grade, and research revealed the existence of significant statistical differences between the average scores of students in thinking test contemplative in the two groups in favor of the experimental group.

The study of Buzdar and Ali (2013, Buzdar & Ali) aimed to explore the possibility of developing reflective thinking among learners through distance learning programs.

The study is based on Mezirow's theory of reflective thinking, and it was concluded that teachers have a strong tendency to enhance the understanding and reflective thinking of learners, in addition to the need to integrate content to develop critical thinking of learners. Hsieh & Chen (2012, HSIEH & CHEN) study revealed the impact of reflective thinking on the program design process on the performance of students' learning.

The study showed that the experimental group has the ability to write a comment on the design. Improve the learning performance of low - level students, particularly in program design processes. The aim of the research Sivnari et al. (2009, Namvar, Naderi, Shariatmadari & Seifnaraghi) aimed to study the effectiveness of weblog learning on the reflective thinking of English literature students, and resulted in the presence of statistically significant differences between the two groups for the experimental group. The study of Demir and Dosa (2012, Dosa & Demir) to analyze the students 'posts to see students' thinking and reflections. The researchers used the content management system (Drupal web), and the study found that the students wrote descriptive writing in the meditative description on three aspects, in terms of course and learning and personal ideas.

Comment on previous studies:

1. There are no previous Arab studies examining the impact or effectiveness of the achievement file on the contemplative thinking, as far as the researcher is aware of, in addition to the lack of it in foreign studies.
2. The studies of Wade and Yarbrough (1996, & Wade Yarbrough) and Ian and Seferoglu (2011, Ayan & Seferoğlu) agreed that there was an effect of the achievement file on meditative thinking and differed in that the study of Wade and Yarbrough (1996, & Wade Yarbrough) tested the effect of Paper achievement file on reflective thinking.
3. Most of the previous Arab studies have been investigating the impact or effectiveness of an educational strategy in the wishful thinking of contemplation, such as: (similar strategy, contracts strategy, the impact of discussion enhanced by questions, etc).
4. There are several previous foreign studies dealing with the impact of some technological techniques (distance learning programs, weblog, Drupal web) in the development of reflective thinking.
5. The sample of most of the previous studies varied from (students preparing teachers, students of English department and middle school students).

Research tools and procedures:

The present research aims to know the impact of the electronic achievement file (E-Portfolio) on the development of reflective thinking and academic achievement of second year secondary school students in the computer course. Both in the exploratory experiment and the basic for the current research.

Research Methodology:

This research uses the quasi-experimental approach of the two control and experimental groups to study the effect of the electronic achievement file as an independent variable on reflective thinking and academic achievement as two dependent variables.

Search variables:

Independent variable / electronic achievement file

dependent variables / a. Reflective Thinking for Second Grade Secondary Students b. Academic achievement in the second year secondary computer course

Experimental design of research:

The researcher used a quasi-experimental design based on two groups by randomly selecting the research sample.

Table (1) Experimental design of research

the group	Processing method	Measurement
Group (beta)	Electronic achievement file	Achievement test after
Scale for reflective thinking after me		Scale for reflective thinking after me
Control Group	Traditional teaching method	Achievement test after
		Scale for reflective thinking after me

The research sample:

The research sample consisted of (60) second year secondary school students in the seventy-fifth secondary school in Jeddah. The following table shows the distribution of the research sample among the experimental and control groups:

Table (2) Sample Size

Total	control	Experiment	Group
The number	20	20	**40**

Search tools: The search included three tools

First: Electronic achievement file:

The electronic achievement file was conceptualized; its contents included the following:

Title Page: Displays the file title, school name, subject name, teacher name, school year, and grade.

Contents: Index of the contents of the file, personal data: the name of the student, and class, hobbies, and a picture of it, and remember the profile.

Instructions and Guidelines: Class Schedule, Instructions pertaining to the subject, social media accounts of the teacher to communicate with students, and the official website address of the subject of the teacher.

Divide into lessons and each lesson contains (objectives and topics of the lesson: the objectives are presented for each lesson, enrichment links: the development of enrichment links are articles and videos related to the subject of the lesson, worksheet: the development of activities and exercises and the use of strategies and thinking skills appropriate to the lesson, mind map The student summarizes the end of each lesson what she learned in the form of a cartoon mind map, whether using electronic mental maps programs or using painter or Word program and then saved as a picture and inserted in the page, home assignment: put homework questions, reflections: put reflective questions Lq lesson, and self-assessment of the student). Practical Guide: Develop a manual to use the practical part of the unit, as well as links to videos to explain the practical material.

Project Unit: The student writes a report on the draft article, and develops the necessary evidence. Best of all: The student selects what she considers distinct from her work.

Build the electronic achievement file:

- Selection of topics: The fifth module was selected from the computer course for the second grade secondary, unit (techniques and programming of smart devices).
- Formulate educational objectives for selected topics
- Validity of the tool: The tool was presented to a group of arbitrators and some paragraphs were modified based on their opinions.

Second: Achievement test in the unit of technology and programming smart devices: The preparation of the achievement test took several steps to reach its final image

Step 1: 1. Identify the basic features of the test: These attributes or characteristics as directives for the test design process. This step requires you to specify the following attributes: (a. Determine the test target, (b) Determine the test dimensions)

Step 2: 2. Specification Table: In the light of the specification table, the objectives of the research and the questions that could achieve the measurement of the objectives were identified and presented to the arbitrators of the specialists.

.Step 3: 1. Build the test by (a. determining the type of test and its vocabulary, b. Writing the test instructions)

Step 4: 1. Prepare the papers and the correction key and design the question paper so that the answer is in the same paper

Step 5: 1. Make sure the test is true**:**

Virtual honesty:1. The virtual honesty of the test was appreciated by presenting it to a group of arbitrators to arbitrate these tools and make the necessary observations and changes.

Internal honesty: 1. Determines how the test relates to the objectives to be measured.

Third: the tool for reflection thinking

A tool for measuring meditative reflection by Kimber et al. (Kember et al. 2000) was used and translated. The instrument was in the form of a five-point scale (strongly agree) and given weight (5), (OK) and weight (4), (neutral) and weight (3), (shows) and weight (2), (strongly opposed) and weight (1), the scale consists of (16) paragraphs divided into two parts:

The non-meditative act consists of two dimensions (the first: the familiar act and includes paragraphs {1,5,9,13 {, the second: the understanding and includes paragraphs} 2,6,10,14 {) the meditative act which consists of two dimensions (third: meditation includes Paragraphs 3,7,11,15}, fourth: critical reflection, including {4,8,12,16}}.

The validity of the scale was confirmed by presenting it to a group of arbitrators in addition to calculating the extraction of the correlation coefficients of the paragraphs in the total degree on the sub-field to which they belong.

The validity of the scale was confirmed by presenting it to a group of arbitrators in addition to calculating the extraction of the correlation coefficients of the paragraphs in the total degree on the sub-field to which they belong

Comment	**Significance level**	**Correlation coefficient value**	the field
D statistically at the level (0.01)	.005	.6010	The familiar act
D statistically at the level (0.01)	.001	.6970	Comprehension
Statistically significant at (0.05)	.017	.5250	Meditation
D statistically at the level (0.01)	.000	.8450	Critical Meditation

It is noted from Table (3) that the correlation coefficients between the rate of each field and the total rate of paragraphs of the scale of meditative thinking ranged between (0.5 - 0.8) and are statistically significant and indicators of the validity of the scale, and to verify the stability of the scale was applied to an exploratory sample outside the study's sample which reached 20 students. Cronbach's alpha equation for internal consistency has been applied, and table (4) shows the Cronbach's alpha coefficient for each of its fields:

Table (4) Cronbach's alpha coefficients on the scale of reflective thinking and its fields:

Cronbach's alpha	The field
0.612	The familiar act
0.715	Comprehension
0.556	Meditation
0.579	Critical Meditation
0.744	Total scale

It is clear from the previous table (4) that the stability factor for the total scale was 0.7444, which is an acceptable value for scientific research purposes.

In order to answer the research questions, hypotheses, and provide a set of recommendations and proposals in the light of the results reached to identify the impact of the electronic achievement file on the development of reflective thinking and academic achievement of secondary grade girl students in the computer course, a set of necessary statistical processes was conducting as follows:

First: Answer the research questions:

- **To answer the first question which provides for:** "Are there statistically significant differences at the level of significant ($\alpha \leq 0.05$) between the average achievement of students of the experimental group that used the electronic achievement file and the average achievement of the control group exposed to the usual teaching method?" The mean and standard deviations were found for the post achievement test scores for both experimental and control groups. Table (5) shows these results:

Table (5): (t) value and its significance for the achievement test

Test	Mean	Standard deviation	The difference between averages	Degrees of freedom	(t) Calculated	Statistically significance
Experimental	16.30	1.780	4.850	38	8.384	0.00
Control	11.45	1.877				

From the previous table (5) we found the following:

1. Higher the average score of students in the post-achievement test for the experimental group reached (16.30), while the scores of students in the post-achievement test for the control group (11.45).

2.The calculation of the difference equation (T) for the experimental and control groups with independent test (Independent-Sample T-Test) resulted in statistically significant differences at confidence level (0.5) between the average scores of the experimental group after the test, and the average scores of the post-achievement test. For the control group, in favor of the experimental group.

3. Thus, the zero hypothesis, which states that "there are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) between the average achievement of students of the experimental group that used the electronic achievement file and the average achievement of the control group exposed to the usual teaching method" was rejected.

- **To answer the second question which provides for:** "Are there statistically significant differences at the level of significance ($\alpha \leq 0.05$) between the average performance of the students of the experimental group that used the electronic achievement file and the average performance of the control group that was exposed to the usual teaching method for the scale of reflective thinking?

Table (6) (t) Value and Significance of Reflective Thinking

Dimension	Test	Mean	Standard deviation	The difference between averages	Degrees of freedom	(t) Calculated	The significance of the difference
The familiar act	Experimental	14.65	1.461	2.450	38	3.803	0.001
	Control	12.20	2.484				
Comprehension	Experimental	17.60	1.729	2.450	38	3.882	0.000
	Control	15.15	2.231				
Meditation	Experimental	17.50	1.792	2.900	38	5.837	0.000
	Control	14.60	1.314				
Critical Meditation	Experimental	16.80	1.881	3.150	38	4.985	0.000
	Control	13.65	2.110				
Total scale	Experimental	66.5500	4.57079	10.95	38	6.978	0.000
	Control	55.6000	5.32521				

From the previous table (6) we find the following

1. The calculation of the difference equation (T) for the experimental and control groups with the post-test (Independent-Sample T-Test) resulted in the presence of statistically significant differences at the level of confidence (0.5) between the average of the total sum of meditative reflection scale of the experimental group, and the average of the total sum of the contemplative thinking scale of the control group, in favor of the experimental.
2. Thus, the null hypothesis which states that "there are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) between the mean of the total meditative reflection scale of the experimental group that used the electronic achievement file and the average of the total meditative reflection scale of the group which exposure to regular teaching", was rejected.

✍ **To answer the main question which provides for:** "What is the effect of the electronic achievement file on the reflective thinking and academic achievement of the second year secondary school girl students in the computer course?"

We calculate the effect size scale of the e-achievement file on reflective thinking and the academic achievement of the second year secondary school girl students in the computer course using the Eta square equation: $\mathbf{(\eta^2)= (t^2/t^2+n)}$

To find out the effect of the processing used in the research (Hafeez, Bahi and Nashar, 2004) and calculate $^2\eta$ to find the impact of the electronic achievement file on academic achievement, the following result was reached in the following table (7):

Table (7) Measuring the size of impact of academic achievement

Degree of freedom	**(t) calculated**	**η^2**	**Significance of impact size**
38	8.384	0.65	High

1. The results in the previous table (7) indicate that there is a high impact of the electronic achievement file on the achievement test results for the second grade secondary girl students in the computer course, where it reached (0.65), which is greater than (0.3) as the minimum effect size, and less than (1) Maximum effect size.

2. By calculate $^2\eta$ to find the effect of the electronic achievement file on reflective thinking, the following result is reached in Table (8)

Table (8) Measure the size of the impact of the scale of reflective thinking

Degree of freedom	(t) calculated	η^2	Significance of impact size
38	6.978	0.6	High

3. The results in Table (8) above indicate that there is a high impact of the electronic achievement file on the results of the Reflective Thinking Scale for the second grade secondary girl students in the computer course, where it reached (0.6), which is greater than (0.3) as a minimum effect size, less than (1) a maximum effect size.

Third: Comment on the results:

It is evident from the review of the results of the research and processed them statistically, to the presence of a high impact of the e-achievement file on the reflective thinking and academic achievement of the second grade secondary girl students in the computer course, due to the fact that the e-achievement file provided a tool that helped girl students to reflect on their work and monitor, review and check their performance. This was consistent with the study of (Wade & Yarbrough, 1996) and (Ayan a & Seferoğlu, 2011), as well as to provide a reference to all the papers, costs and projects discussed in the course and enriching links through the electronic achievement file which, in turn, has contributed to raising the level of academic achievement of girl students and this is consistent with the studies of Al-Harbi (2011) and Mohammadi (2014).

Recommendations and suggestions:

❖**Recommendations: In the light of the research findings, the following recommendations may be made:**

1. To move from the paper achievement file to the electronic achievement file and benefit from its advantages.
2. Provide the Internet in schools and enable students to connect with accordance to appropriate controls.
3. Provide advanced computers (laptops - iPad) through which to connect to the Internet and download programs and obtain the necessary electronic materials.
4. Raising awareness of the importance of technological innovations among teachers, and the way they are employed them in education.
5. Provide full support to teachers and facilities necessary to enable them to employ technology in education.

❖**Proposals: In the light of the results of the current research, the researcher suggested the following:**

1. Conducting a similar research experiment on other stages of study**.**
2. Conduct a similar research experiment on other courses**.**
3. Activate the use of electronic achievement file in education and provide suggested models for the teacher to be modified.
4. Provide modern devices with Internet access in schools**.**

List of references:

First: Arabic References:

Ibrahim, Magdi Aziz (2005). Thinking from an educational perspective

Al-Harthy, Hessa bint Hassan Hassen (2011). The impact of past questions on the development of thinking Contemplation and academic achievement in the science course for first grade students. Educational Journal of the Faculty of Education in Sohag, No. 35, Volume 1

.Kutait, Ghassan (2009): Classification Computing, Dar Al Thaqafa, Amman, Jordan.

Gaber, Abdel Hamid (2006): Contemporary Trends and Experiments in Evaluating the Performance of the Student and the Teacher, Dar Al-Fikr Al-Arabi, Cairo, Egypt.

Abu Mutlaq, Hana (2012): Effectiveness of using the electronic achievement file to develop some Teaching competencies of female teachers at the Faculty of Education, Al-Aqsa University, Gaza. Unpublished Master Study. Faculty of Education, Al-Azhar University, Gaza, Palestin.

Constantine and Lorenzo (2004) .Professional Achievement File, Teacher's Guide to Excellence, Translated by: Mohamed Taleb Suleiman, Gaza, University Book House**.**

Al-Mufarej, Badriya; Sayar, Jamila; Al-Warmi, Mashael; Al-Ghanem, Huda, (2006). Reality The application of the calendar using the completion profile of primary school students in the State of Kuwait (a field study). Educational Research and Development Department, Kuwait.

El-Baz, Ahlam Hassan; and Sayed, Mahmoud Al-Farhati (2008). Teacher Professional Accreditation: Introduction. Education Development, Cairo: New University House

Mohammedi, Abdullah bin Mohammed Ghanem (2014). Effectiveness of the electronic achievement file in Students' Acquisition of Scientific Concepts in Biology for the Second Year in Madinah, Journal of Arab Studies in Education and Psychology, No. 44, Part II**.**

Al-Harbi, Majida Ayed (2011). Effect of the calendar using achievement files on motivation. For the achievement and academic achievement of the second grade female students in Medina, an electronic library, the link was retrieved on 14/7/2014 from the website: http://www.nooonbooks.com **.**

Otaibi, Mai bint Khalil bin Ibrahim (2013): the impact of language activities associated with files Electronic Achievement in Developing English Writing Skills for Preparatory Year Students at King Abdulaziz University in Jeddah, Umm Al-Qura University Digital Library, Retrieved 2/6/2014 from link: https://uqu.edu.sa/lib/digital_library / uqu_msgs_all / en / 75

Al-Barakati, Nevine Hamza (2008): Effectiveness of using the achievement file on the performance of female students
Mathematics course design activity in the program of educational preparation at the University of Umm Al - Qura, the Egyptian reading and knowledge magazine, No. 85.

Al-Harthy, Hessa Hassan (2011): The impact of past questions on the development of reflective thinking and achievement in the science course for first grade students in Makkah. Master Thesis. College of Education, Umm Al - Qura University.

Al-Qatrawi, Abdul-Aziz Jameel (2010), The Impact of Using the Similarities Strategy in Development Science processes and reflective thinking skills in science for eighth grade students. Master Thesis. Faculty of Education, Islamic University, Gaza

Abu Awwad, Feryal Mohammed and Ayyash, Amal Najati (2012): The Impact of the Inter-Teaching Strategy In the development of academic achievement and reflective thinking among ninth grade students, Hebron University Journal for Research - B Volume (7), Issue (2**)**

Abu Nahl, Jamal (2014): Reflexive Thinking, Thinking and Skills, Retrieved on 2015-01–15 from the link: http://pulpit.alwatanvoice.com/content/print/320341.html

Abu Amsha, Khaled (2015): The Importance of Reflective Thinking and its Impact on Student Education, ed Retrieved on 15-02-2015 from the link: https://qasid.academia.edu/KhaledAbuAmsha

Second: Foreign References:

Canning, N. and Reed, M. (2010): *Reflective Practice in the Early Years*, first edition, U.S.A: SAGE Publications.

Kovalik, S and Olsen, K. (2010): *Kid's Eye View of Science: A Conceptual Integrated Approach to Teaching Science K-6*, first edition, U.S.A: Sage

Moon,J.A (1999),*reflection in learning and professional development theory and practice*, London : kogan page.

Mary, D. &Wolf,K.(1998)."*Teaching Portfolio: Purposes and Possibilities"*,Teacher Education Quarterly, 25, 1, 9-22.

Greenberg, Gary (2004): *The Digital Convergence: Extending the* Portfolio *Model* EDUCAUSE Review, vol. 39, no. 4, http://www.educause.edu/ero/article/digital-convergence-extending-portfolio-model

Wade, R. C., & Yarbrough, D. B. (1996) *Portfolios: a tool for reflective thinking in teacher* education? *Teaching and Teacher Education*, Vol. 12(1)

Ayan, D. & Seferoğlu ,G. (2011) : *Using electronic portfolios to promote reflective thinking in language teacher education*, Educational Studies, 37:5, 513-521

Buzdar, Muhammad & Ali, Akhtar (2013): *Development of* Reflective *Thinking through Distance Teacher Education Programs at AIOU Pakistan*, IRRODL, Vol 14, No 3

Hsieh Pei-Hsuan & Chen, Nian-Shing (2012): *Effects Of Reflective Thinking In the Process Of Designing Software On Students' Learning Performances*, TOJET: The Turkish Online Journal of Educational Technology – April 2012, volume 11 Issue 2

Namvar , Yousef ; Naderi, Ezatolah; Shariatmadari, Ali and Seifnaraghi, Maryam(2009): *Studying the Impact of Web-Based Learning(Weblog) With a Problem Solving Approach on Student's Reflective Thinking*, iJET – Volume 4, Issue 2

Nelson, Sharleen (2011): *3 Keys for a Successful E-Portfolio Implementation*, http://thejournal.com/articles/2011/06/29/3-keys-for-a-successful-eportfolio-implementation.aspx