Alsafeer software for teaching computer literacy

Zieb Rabie Alqahtani

Eastern Washington University

Follow this and additional works at: http://dc.ewu.edu/theses

Part of the Computer Sciences Commons

Recommended Citation
http://dc.ewu.edu/theses/112

This Thesis is brought to you for free and open access by the Student Research and Creative Works at EWU Digital Commons. It has been accepted for inclusion in EWU Masters Thesis Collection by an authorized administrator of EWU Digital Commons. For more information, please contact jotto@ewu.edu.
ALSAFEER SOFTWARE
FOR TEACHING COMPUTER LITERACY

A Thesis
Presented To
Eastern Washington University
Cheney, Washington

In Partial Fulfillment of the Requirements
For the Degree
Master of Science in Computer Science

By
ZIEB RABIE ALQAHTANI
Spring 2013
THESIS OF ZIEB ALQAHTANI APPROVED BY

______________________________________________   DATE ______________
DR. CAROL TAYLOR, GRADUATE STUDY COMMITTEE

______________________________________________   DATE ______________
DR. KOSUKE IMAMURA, GRADUATE STUDY COMMITTEE

______________________________________________   DATE ______________
DR. SCOTT FINNIE, GRADUATE STUDY COMMITTEE
MASTER’S THESIS

In presenting this thesis in partial fulfillment of the requirements for a master’s degree at Eastern Washington University, I agree that the JFK Library shall make copies freely available for inspection. I further agree that copying of this project in whole or in part is allowable only for scholarly purposes. It is understood, however, that any copying or publication of this thesis for commercial purposes, or for financial gain, shall not be allowed without my written permission.

Signature______________________

Date__________________________
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>iv</td>
</tr>
<tr>
<td>List of Figures</td>
<td>vi</td>
</tr>
<tr>
<td>List of Tables</td>
<td>viii</td>
</tr>
<tr>
<td><strong>Chapter One: Introduction</strong></td>
<td>1</td>
</tr>
<tr>
<td>1.1 OVERVIEW OF EDUCATION SYSTEM IN SAUDI ARABIA</td>
<td>1</td>
</tr>
<tr>
<td>1.2 COMPUTER LITERACY IN SAUDI ARABIA</td>
<td>2</td>
</tr>
<tr>
<td>1.3 ADVANTAGES AND DISADVANTAGES OF COMPUTERS IN EDUCATION</td>
<td>5</td>
</tr>
<tr>
<td>1.4 PROBLEM STATEMENT</td>
<td>6</td>
</tr>
<tr>
<td>1.5 GOALS AND OBJECTIVES</td>
<td>7</td>
</tr>
<tr>
<td><strong>Chapter Two: BACKGROUND</strong></td>
<td>10</td>
</tr>
<tr>
<td>2.1 THE EFFECTS OF COMPUTER TECHNOLOGY ON DAILY LIVES</td>
<td>10</td>
</tr>
<tr>
<td>2.2 JUSTIFICATION AND RELATED WORK</td>
<td>11</td>
</tr>
<tr>
<td>2.3 EFFECTIVENESS OF COMPUTERS IN EDUCATION</td>
<td>14</td>
</tr>
<tr>
<td><strong>Chapter three: project methodology</strong></td>
<td>16</td>
</tr>
<tr>
<td>3.1 ASSESSING STUDENTS LEVEL OF COMPUTER EXPERTISE</td>
<td>16</td>
</tr>
<tr>
<td>3.2 E-LEARNING PROGRAM DESIGN AND DEVELOPMENTS</td>
<td>17</td>
</tr>
<tr>
<td>3.3 ACCEPTANCE TESTING</td>
<td>18</td>
</tr>
<tr>
<td><strong>Chapter four: Alsafeer software</strong></td>
<td>20</td>
</tr>
<tr>
<td>4.1 REQUIREMENTS</td>
<td>20</td>
</tr>
<tr>
<td>4.1.1 The importance of the e-learning and the survey questionnaire</td>
<td>20</td>
</tr>
<tr>
<td>4.1.2 Background of Computer Education in Saudi Arabia</td>
<td>21</td>
</tr>
<tr>
<td>4.1.3 Intention to help Saudi Arabia students learn computer skills</td>
<td>21</td>
</tr>
<tr>
<td>4.2 DEVELOPMENT METHODOLOGY</td>
<td>22</td>
</tr>
<tr>
<td>4.2.1 Requirements analysis and specification</td>
<td>23</td>
</tr>
<tr>
<td>4.2.1.1 User Characteristics and Target Audience</td>
<td>23</td>
</tr>
<tr>
<td>4.2.1.2 User and System Functional Requirements</td>
<td>24</td>
</tr>
<tr>
<td>4.2.1.3 Non-Functional Requirements</td>
<td>26</td>
</tr>
<tr>
<td>4.2.1.4 Software Requirements</td>
<td>26</td>
</tr>
<tr>
<td>Figure</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>1</td>
<td>Data Architectural Context Diagram</td>
</tr>
<tr>
<td>1</td>
<td>Data Architectural Context Diagram</td>
</tr>
<tr>
<td>2</td>
<td>the database schema</td>
</tr>
<tr>
<td>3</td>
<td>Entity-Relationship Model</td>
</tr>
<tr>
<td>4</td>
<td>DATA FLOW DIAGRAM</td>
</tr>
<tr>
<td>5</td>
<td>main function</td>
</tr>
<tr>
<td>6</td>
<td>home_load function</td>
</tr>
<tr>
<td>7</td>
<td>welcome page</td>
</tr>
<tr>
<td>8</td>
<td>form4 timer properties</td>
</tr>
<tr>
<td>9</td>
<td>Graphical user interface for home page</td>
</tr>
<tr>
<td>10</td>
<td>home page code</td>
</tr>
<tr>
<td>11</td>
<td>“DynamicButton_Click” function</td>
</tr>
<tr>
<td>12</td>
<td>“درد (Windows7)”category “الفارقة” -Mouse section</td>
</tr>
<tr>
<td>13</td>
<td>“الفارقة” section: – exercise</td>
</tr>
<tr>
<td>14</td>
<td>“الفارقة” -Mouse section: success single-clicking</td>
</tr>
<tr>
<td>15</td>
<td>“الفارقة” -Mouse section: double-clicking</td>
</tr>
<tr>
<td>16</td>
<td>“الفارقة” section: drag and drop</td>
</tr>
<tr>
<td>17</td>
<td>A chart represents the Frequency and Percent of “Do you have access to a computer at home” question</td>
</tr>
<tr>
<td>18</td>
<td>A chart represents the Frequency and Percent of “How long have you received theoretical lectures on using the computer” question</td>
</tr>
</tbody>
</table>
Figure 19: A chart represents the Frequency and Percent of “From your point of view, do you see that traditional computer education is successful?” question .............................. 55

Figure 20: A chart represents the Frequency and Percent of “From your point of view as a student, what is the success rate of traditional computer education?” question .......... 57

Figure 21: A chart represents the Frequency and Percent of “Of the methods listed below, what are some ways to attract students to learn about computer?” question .................. 58

Figure 22: A chart represents the Frequency and Percent of “Has the program put the information in a clear way for you?” question ................................................................. 63

Figure 23: A chart represents the Frequency and Percent of “To what extent is program useful for you after working on it” question ................................................................. 65

Figure 24: A chart represents the Frequency and Percent of “to what extent did the program illustrate the importance of materials for you?” question ................................. 66

Figure 25: A chart represents the Frequency and Percent of “Did the images and instructions make your learning experience easy?” question ................................. 67

Figure 26: A chart represents the Frequency and Percent of “What is your evaluation for the program based on the benefit that you got?” question ................................. 68
LIST OF TABLES

Table 1: user and System Functional Requirements ................................................................. 24

Table 2: Non-Functional Requirements ............................................................................. 26

Table 3: software requirements ......................................................................................... 26

Table 4: hardware requirements ....................................................................................... 27

Table 5: Entity Relationship Diagram Notations ................................................................. 38

Table 6: Class sections ...................................................................................................... 52

Table 7: the Frequency and Percent of “Do you have access to a computer at home” question ................................................................................................................................. 52

Table 8: the Frequency and Percent of “How long have you received theoretical lectures on using the computer?” question ................................................................................................................................. 53

Table 9: the Frequency and Percent of “From your point of view, do you see that traditional computer education is successful?” question ................................................................. 55

Table 10: the Frequency and Percent of “From your point of view as a student, what is the success rate of traditional computer education?” question ......................................................... 56

Table 11: the Frequency and Percent of “Of the methods listed below, what are some ways to attract students to learn about computer?” question ................................................................. 58

Table 12: Pre test .............................................................................................................. 59

Table 13: Measuring the level of students usage of computers (pre) ........................................ 59

Table 14: Evaluation for computer usage skill (pre) .......................................................... 60

Table 15: Measure the level of using Microsoft Word (pre) ................................................ 61

Table 16: Measure the level of using Power Point (pre) ..................................................... 62
Table 17: the Frequency and Percent of “Has the program put the information in a clear way for you?” question ................................................................. 63
Table 18: the Frequency and Percent of “To what extent is the program useful for you after working on it” question ......................................................... 64
Table 19: the Frequency and Percent of “to what extent did the program illustrate the importance of materials for you?” question ..................................... 65
Table 20: the Frequency and Percent of “Did the images and instructions make your learning experience easy?” question .................................................... 66
Table 21: the Frequency and Percent of “What is your evaluation for the program based on the benefit that you got?” question ........................................... 67
Table 22: Post test ........................................................................................................ 68
Table 23: Measuring the level of students usage of computers (post) ......................... 69
Table 24: Evaluation for computer usage skill (post) .................................................. 70
Table 25: Measure the level of using Microsoft Word (post) ........................................ 70
Table 26: Measure the level of using Power Point (post) ............................................. 71
CHAPTER ONE: INTRODUCTION

1.1 OVERVIEW OF EDUCATION SYSTEM IN SAUDI ARABIA

Before the creation of the Kingdom of Saudi Arabia in 1932, education was limited to informal schools run by mosques. Small groups of students were taught Islamic laws, as well as reading and writing. Until 1956, there were no schools for girls, who received their education at home. While this exclusively religious system disappeared, the government maintained the importance of Islamic studies in the modern education system. Thus, according to Islamic law, boys and girls do not have the right to attend the same schools [1].

The Ministry of Education also provides separate budgets for girls’ and boys' schools. Prior to 1970, the literacy rate was only 15% for men and 2% for women, a rate lower than that of Yemen and Afghanistan. Today, a nationwide public educational system of Saudi Arabia consists of twenty-eight universities, more than 24,000 schools, and a large number of colleges and other educational and training institutions [2].

The system provides students with free education, books and medical care and is open to every citizen of Saudi Arabia. More than 25 percent of the annual state budget is used for education including vocational training. The Kingdom of Saudi Arabia also has a scholarship program to send students abroad to the United States, Canada, France, United Kingdom, Australia, Japan, Malaysia and other nations. Currently, thousands of students are sent to higher education programs each year [3].

The study of Islam remains the nucleus of the Saudi educational system. The Islamic aspect of the Saudi national curriculum was studied in a 2006 Freedom House
report. The report found that in religious education classes (in any religious school) children are taught to condemn other religions, in addition to other branches of Islam. The Saudi religious studies curriculum is taught outside the Kingdom in schools throughout the world. At the secondary level, the periods required for religious studies have been reduced, although it is possible for students to receive education with a concentration in religious studies.

The Saudis can continue their studies in universities where the languages used for teaching are Arabic and English [4]. Two types of programs are provided: western style and those of Islamic education. Women are admitted to universities on the same basis as that of men, but they are completely isolated from the men during their university studies. For example, they do not have the right to attend classes taught by a man and must then take the course on a screen of CCTV.

1.2 COMPUTER LITERACY IN SAUDI ARABIA

There is a difference in the level of usage of computers in education, where a tool for this measurement is inculcated in the subject or in the curriculum of the school. Some of the advantages of computers in education are [5][6][7]:

1. Use of different media: e.g. text, images, video, voice.
2. Contents treated faster.
3. Generates autonomy.
4. Promotes independent learning.
5. Facilitates understanding.
6. Generates interaction between students, resulting in teamwork.
7. The application is enormous

8. Transfer large amounts of information about the course.

9. Resources are presented more attached to reality.

10. Makes the evaluation process easier, produce results quickly and without error.

11. It tends to be increasingly accessible from the economic point of view

There is still some distinction during the use of computer education in Saudi Arabia, where any tool for educational curriculum is planned to be devised or look for material in order to support the teaching and learning. Hence, it has become even more important for the teachers to understand how to operate the functions of computer as a form of teaching tool. With the growing importance of computer education, the Saudi government has also taken some measures to incorporate it as a part of Saudi curriculum [8].

Technologies significantly impact human ability to adapt and to control their environments. Computers have been used in many areas of a person's life, and have become a significant part of people's daily life. Many people use technology in their everyday life, such as remotely communicating with family and friends and completing online job applications. Computers have become an important part of everyone’s work and personal life. In this world, it seems as if nothing is possible without technology. Technology affects the education process throughout the world; there are many schools where technology is used and students are taught using the technology. There are a few schools and some educational fields where technology has not been used. Gone are the days when students are handed hard-copy books to read and analyze. Today, many books
are available online so that the students can download and read them easily and thus can improve their reading and writing abilities [9].

One study examined characteristics of education within the Saudi education system: Government regulation, the emphasis on the memorization process and the Teaching method – how teachers teach. In public schools (government schools), classrooms and textbooks are under the Saudi government control. The Ministry of Education and Higher Education committee has determined all the material contents which are required to be in basic courses and textbooks. After getting approval from Ministry of Education, private educational institutions have given permission to establish private schools but curriculum should be approved from government authorities. These private schools are required to consider computers and English as two major subjects in their curriculum [10].

The pedagogical approach puts pressure on rote memorization and profound dependence on textbooks has conventionally been used in Saudi Education. These teaching methods do not support computer education which requires more practice as compared to other subjects which are mostly memorized [11].

Conventional lectures and oral presentations have been considered the basics of Saudi education for many years. Now, this approach is not considered as developing creative thinking or independent thinking. The shift has moved towards education which can enhance action learning and emphasizes computer literacy [12].
1.3 ADVANTAGES AND DISADVANTAGES OF COMPUTERS IN EDUCATION

There are advantages and disadvantages of computers in education. First, we will outline the advantages and then describe the disadvantages of learning with computers.

The advantages are well known and documented in numerous studies. The first advantage is that students are more attentive and interested through the use of computers. The second advantage is that students are more engaged and become active participants in their own learning. Finally, once a teacher becomes skilled at developing lessons, there is less time and energy needed by the teacher and the computer becomes a great teaching aide [13].

Disadvantages of the use of computer technology include the technology itself and a somewhat long learning curve for teachers. Computers are expensive and somewhat time consuming to maintain. An expert is typically needed to service the technology. For teachers, they must reorganize the way they teach and prepare materials. The teacher must be thoroughly trained in the use of computers in order to use them effectively in the classroom, plus, some teachers that are adverse to change may reject teaching through technology because of the speed with which technology changes [14].
1.4 PROBLEM STATEMENT

Currently, there are people that don't know how to use a computer properly and they do not have the minimum knowledge of how to use computers. For example, they don’t know how to do basic things such as turn on power to the computer, are unable to use a mouse and computer keyboard, and don't know how to shut down the computer properly after use. This problem is called “Computer Illiteracy”.

Those who suffer from Computer Illiteracy use books for learning and are ignorant of the importance of the use of computers. That leads to an increase in the Computer Illiteracy problem. The problems growing from computer illiteracy are becoming clearer as companies replace humans with computers. Teaching these people to use computers has become very important, because the computer is an essential device in the modern world. In order, to find an optimal solution to the computer illiteracy problem, there is a trend to develop software to develop for teaching computer use.

The purpose of this thesis is to create a software package to teach computer literacy and then measure the difference in computer knowledge gained by students who have used the software-based learning system. The software package has been named Alsafeer because the author's family called him Alsafeer which means ambassador.
Fast growing communication systems and information technology have become critical components of almost every education process. Educational institutions can take advantage of the new communication systems and information technologies through practical application of computers. The Alsafeer software will be used to improve the basic computer literacy skills of students in secondary school. So, they have the skills to meet the technology demands of modern society.

This section will outline the goals and objectives of this thesis.

**Goal.1- Understand Saudi Arabia students' computer literacy knowledge.**

The overall Goal of the Alsafeer software project is to improve student’s ability to be more effective in using such applications like Microsoft Word 2007 and Excel 2007, improve their computer skills, and become more computer literate. As a first step, this project aims to investigate computer education in Saudi Arabia in order to gain on understanding of the use of computers in education and obtain an overall view of the education system in Saudi Arabia.

**Goal.2- Use a custom Software Application to teach computer literacy.**

The Alsafeer software is designed to teach the beginner basic computer skills, the basics of Microsoft Word 2007, Excel 2007, and PowerPoint 2007 and Internet concepts. In Word 2007, the beginner is taught how to write text, open a file, save a file, create a new document, change the font type or size, change the font color, and other tasks. In Excel 2007, the beginner is taught how to create a new, blank workbook, save a workbook, enter some value in a specific cell, and other spreadsheet related tasks. In
PowerPoint 2007, the beginner is taught how to open a presentation, create a new blank presentation, save a presentation, insert a new slide, and others. Finally, Alsafeer software will teach Internet concepts, teach the user how to open Internet Explorer, use “Google” to search, and accomplish many other objects.

The application will be similar to existing software for teaching computer literacy, such as MyITLab [22] which is a software packages used to teach Microsoft Office applications and other basic computer skills. However, the application will differ from these packages in that it will provide introductory knowledge and will be intended for users whose primary language is Arabic. The system will have five major lessons. The first will deal with using the Windows operating system and will also discuss general computer knowledge such as input and output devices, hardware and software, etc. The next three lessons will teach the user Microsoft Office Word, Power Point, and Excel, respectively. These sections will simulate the Office programs and will provide basic assignments and follow-up tests for the user in each application. The fifth lesson will deal with the Internet, its uses, and how to use browsers, email, etc.

The following list breaks down each goal into objectives that must be met under each goal:

**Goal 1- Understand Saudi Arabia Students' Computer Literacy Knowledge:**

Objective 1- Develop a baseline survey for assessing Saudi Arabian students’ computer knowledge.

Objective 2- Analyze the survey results.
Goal.2- Develop and use a custom Software Application to Teach Computer Literacy.

Objective 1- Develop the System using Visual Studio 2010 (windows form application). This application will:

- Guide beginners through basic computer skills, including how to use a mouse, keyboard, and other basics.
- Helps beginners learn the basics of Microsoft Word 2007.
- Helps beginners learn the basics of Microsoft Excel 2007.
- Helps beginners learn the basics of Microsoft PowerPoint 2007.
- Helps beginners learn Internet concepts.

Objective 2- Conduct user acceptance testing using another survey.

- Distribute the Alsafeer to the same school which we test their students' knowledge.
- Get students feedback.

Objective 3- Conduct user acceptance testing using interview.

- Get instructor feedback.

Objective 4- Analyze Surveys and Interviews

- Informally compare the results before and after using the Alsafeer program.
CHAPTER TWO: BACKGROUND

Chapter two is divided into several sections as follows:

Section 2.1 The Effects of Computer Technology on Daily Lives. This section will discuss the effects of rapid growth of the communication and computer technology on areas of the life, the education in Saudi Arabia, and how to raise the computer literacy in Saudi Arabia.

Section 2.2 Justification and Related Work. In this section we will review some related work about e-learning for computer use. Several studies of various researchers are introduced, explained and discussed with their main results, benefits and limitations.

Section 2.3 Effectiveness of Computers in Education. We will talk in this section about the usage of computer technology in education, the effects of excessive use of computers on children, and the effects of excessive use of technology in education.

2.1 THE EFFECTS OF COMPUTER TECHNOLOGY ON DAILY LIVES

Currently, computers are used by nearly everyone, because of innovations in computer technology. Some of the reasons for this widespread use of technology are noted in this section. Computers are used to improve worker productivity. The growth of new technologies and advancements has made human lives comfortable and convenient. It has become a basic benefit in modern life. It is the main tool used in the global economy. People are therefore able to spend and earn through computers. Computers have a tremendous effect on life. People have become very dependent on computers such
that it is hard to imagine life without them. Since the use of computers has become a part of routine life, there is a critical need for computer education, and computer literacy has become a significant part of most curriculums [15].

2.2 JUSTIFICATION AND RELATED WORK

Several studies discussed e-learning using computers. In this section, several studies from various researchers are introduced, explained and discussed with their main results, benefits and limitations.

In Saudi Arabia there are a huge number of people that have no knowledge of computers. In addition, computers are used for teaching at schools and universities, and have become important in the learning processes. In these cases, there is established research on reducing the computer literacy problem. The study in [16] illustrates the need to learn how the computer is used in Saudi Arabian colleges, and explored a scheme that is used to teach the instructor in the college how the computer is used. The research is divided into three parts: In the first part, a questionnaire is established in order to measure the level of computer learning needs and to determine the knowledge base of people in computer usage. In the second part, the questionnaire is distributed to more than 50 people and data is collected. In the last part, the information is examined and it is used to build up an optimal program for the computer illiterate, which depends on the weaknesses of the target people in the use of computers.

In another study, [17] studied the computer literacy problem in female students in Saudi Arabia. The researcher built a questionnaire to determine the knowledge level in
the use of computers. The main objectives of this study were to discover several indications, which are: the percentage of female students that have a personal computer, the percentage of the female students that can use the Internet and access their e-mail, if the students took any computer lessons, the number of lesson taken in their collage, the type of available computer facilities, the kind of software program used, their goals by using e-mail, the type of the Internet sites they prefer to visit, and the conditions that affect the computer used. The result was disappointing, because there are a majority of students that have not taken a computer course, many students that have not used the Internet, and a high percentage of students that do not have information about using computers. The study presented a program that is used to teach the computer illiterate how to use the computer and Internet, which has become very essential.

Other researchers [18] investigated a new method to learn how the computer illiterate used the computer. The writer made a course to teach the computer illiterate the main computer use principles, and develop the capability in many technologies that commonly involve computer use. The main aim of the course is to teach the students how they can use the computer in many ways, which are: using the word processor and how use it is used for documentation, using excel program to analyze information, using the database access program to monitor and analyze data, and using power point to make a presentation.

Researchers in [19] estimated the skills, computer levels and the experience in computer use for librarians. Also, they investigated computer literacy, the advantages obtained by using the computer, how to use software programs and problems related to computer use. The results obtained showed that the great numbers of librarians do not
have a good level of knowledge in computer use and they have not developed their experience in using computers. The researcher explored a training program that it is used to develop librarians’ skills in computer use to improve work productivity. The study in [20] researched data technology use by the librarians, which shows they now work efficiently. [21] Explained the relevance between the computer literacy and the ability to apply the technologies.

MyITLab is a web-based application used for practicing Microsoft Office applications, taking online tests that the teacher might assign, and access exercises related to significant computer concepts. MyITLab is developed by “Pearson Education” to complement their computer textbooks. This software allows students to learn basic skills in Office 2007 and 2010 using a lead-by-example method. The content of the training practices in MyITLab corresponds to the textbook. Teachers can also manage exams using MyITLab. Students are tested using different scenarios, but on the same skills as in the training assignments [22].

Microsoft Office skills and basic computer is needed for most jobs these days. These skills also support students in their classes. The academic content on Internet was thought to be very useful by both the instructors and students, from the class perceptions, it was concluded that it was strenuous for the instructor to assist each student in the class when they faced difficulties. So having an assistant to the instructor in larger classes is suitable. [23]

Being Fluent is a stumpy but wealthy text that is a good onset for thinking about computer literacy. Every contribution to the issue of what to learn and teach about Literacy and Computer Literacy (ICT) is a kernel in the Stream that tried to cross, to
enable to resolve and dwell a new world of bits for the greater good. A certain amount of theory was synthesized, using Being Fluent as a type of sluice-box, to devise a program for more data analysis and collecting. Across disciplines can be reached and widest possible range of theory and practice (data) also can be examined, the most important questions will be formulated and get the most apparent possible answers. [24]

In conclusion, the need to learn how the computer is used in the Saudi education system is an important issue. There are many studies that show that a great number of Saudi Arabians do not have a good level of knowledge in computer use. On the other hand, there are many program applications such as MyITLab that were designed to teach the computer illiterate how to use the Internet and computer. Plus, new methods were investigated to learn how the computer illiterate used the computer. These studies and applications will help us to build a strong background about how to design and develop the Alsafeer software.

2.3 EFFECTIVENESS OF COMPUTERS IN EDUCATION

There are limitations to the computer's benefits in teaching. People are potentially more productive using the capabilities of a computer, but this is not always the case in practice. Having children spend too much time on computers may result in negative consequences for intelligence, development, health and improvement in their basic skills. However, there is no doubt that children today are more knowledgeable than children of 20 or 30 years ago, and this is due to the large amount of information available. [25]

Thus, with proper guidance and direction, a student can get appropriate knowledge efficiently. But the use of technology in education should be moderate and if
used in excess can result in misuse of equipment. The importance of new technologies is becoming increasingly evident in higher education, with its advantages and disadvantages. In this paper some reflections on this issue have been presented, including the relationship of these generic skills of communication and information to be acquired by a student who pursues a new degree. [26]

The interconnection of networks and computers has improved the level of education. The computer has also become a means of interpersonal communication, an inexhaustible source of information and a gateway to different worlds. The continued development of the Internet also has given a place for an open field expression and digital media creation. It has established the principles of computer literacy as the basis of Saudi education. The ability for public expression and creation, to reach out to audiences and users of Internet, is highly motivating for those who have something to offer and, in turn, provides them the chance to see what others have to offer [27].
CHAPTER THREE: PROJECT METHODOLOGY

This chapter focuses on the major objectives of the project, the required data and the total methodology to obtain the needed result from the program. The questionnaire objectives, components, rules, and the expected results are presented. In addition, the program uses the C# programming language which will also be described later.

3.1 ASSESSING STUDENTS LEVEL OF COMPUTER EXPERTISE

The first step, which was done prior to creating requirements for the program, was a survey for the students to estimate their level of computer proficiency. This step is important for collecting baseline data for later use.

Seventy copies of the prepared questionnaire (which is described in section 3.3) were sent to a class, which consists of two sections, in a Saudi Arabian middle school. As mentioned, the questionnaire was divided into two sections given at different times. The first section that was sent was used to investigate the percentage of those proficient in utilizing the computer in Saudi Arabia. The second section is intended to measure the influence of utilizing the Alsafeer software to improve computer proficiency, based upon the baseline data collected in the first section.

The first questionnaire was used to collect different student’s opinions, and to assess the student’s level of computer expertise.
3.2 E-LEARNING PROGRAM DESIGN AND DEVELOPMENTS

As previously stated, the Alsafeer software was developed, to educate students on basic computer skills, the basics of Excel 2007, Microsoft Word 2007, PowerPoint 2007 and Internet concepts.

The results of the baseline questionnaire were used to create the requirements of the Alsafeer Software. The other input into the requirements of the Alsafeer was the author’s expertise teaching within the Saudi Arabian education system. Details of the software development process will be described in Chapter 4.

Because the Alsafeer Software is relatively small and not team developed, a simple, mature development methodology was selected, The Waterfall Model. In this paradigm, each stage is completed in sequential or consecutive order, reviewing its outputs before proceeding to the next stage.

The Alsafeer software has three types of external entities. They are:

- User entity
- Maintenance
- Database (MS Access)

More details about development using the Waterfall model are included in chapter 4.
3.3 ACCEPTANCE TESTING

As mentioned previously, the student questionnaire was split into two sections. Each section measures various categories of information. These categories are used throughout the questionnaire to measure student opinions in the project. Then, their opinions are taken and examined for improving the program.

In the first questionnaire, we have two sections:

The first section of the questionnaire focuses on several topics, which are: measuring the middle student’s level of knowledge in computer definitions and components, measuring the middle student’s ability of using physical hardware, assessing students’ skills in computer use, measuring the middle school student’s level of knowledge in the use of the Microsoft Word program, measuring the middle student’s
level of knowledge in the use of Microsoft PowerPoint program, and measuring the middle student’s level of knowledge in the use of Microsoft Excel.

Also, the second section of the questionnaire concentrates on several topics, which are: measuring the extent of the application of modern technology in the educational institutions in Saudi Arabia, measuring the extent of the challenges facing the future application of modern technology in Saudi educational institutions.

The questionnaire process is done by distributing the questionnaire to the students in middle schools in Saudi Arabia. Students’ opinions and their answers from the questionnaires are analyzed.

The second questionnaire was given to investigate the effect of utilizing the Alsafeer software. The questionnaire tested for improved computer skills, and the students’ opinion of the program.

Afterward, some of the computer instructors were interviewed, in order to obtain their views and opinions of the Alsafeer Software. The interest is in gaining their views about the programs potential to enhance the basic computer literacy skills of the students.

The instructors are: Khalid Sultan Alhajri, Saeed Mohammed Alaklabi, Abdulrhman Alsabaie, Bejad Malahi AlQahtani, and Abdullah Mohammed AlQahtani.
In this chapter the design of the Alsafeer software is discussed. The discussion will follow a typical software engineering methodology, with the requirements, development methodology, language selected, and acceptance testing discussed in sections 4.1, 4.2, 4.3 and 4.3, respectively.

### 4.1 REQUIREMENTS

The requirements of the Alsafeer program stem from the goals and objectives of this project, mentioned in chapter one, and the motivation to create this program. They are based on:

1. The e-learning principles outlined in chapter 2
2. The existing lack of practical computer knowledge the Saudi Arabian middle school students have.
3. The intention to help these students learn computer skills

#### 4.1.1 The importance of the e-learning and the survey questionnaire

Since the usage of computers has become a part of daily life, there is a serious need for computer instruction, and computer literacy has become a significant part of most curriculums. The importance of the survey is derived from these facts. The main goal is to teach the computer basics that should be known by everyone.

The Alsafeer software is similar to many e-learning applications such as MyITLab[17] that are used to allow learners to learn basic computer skills, including
Microsoft office software, software basics, and Internet basics. Unlike MyITLab, which primarily uses English, the Alsafeer software will target users who speak Arabic.

---

### 4.1.2 Background of Computer Education in Saudi Arabia

As concluded in Chapter Two, in Saudi Arabia there is a massive number of people that have no basic knowledge of computers. For example, when I was an instructor at New Horizons Computer Learning Center, I had students who had never used a computer in their lives. They didn't even know how to use a mouse. The need to learn how the computer and its related devices (such as mice and keyboards) are utilized in the Saudi education system is an important matter. Moreover, there is much research that indicates that an enormous number of Saudi Arabians do not have a good level of knowledge in computer use. There is a need to build e-learning applications to help with computer literacy in Saudi Arabia.

---

### 4.1.3 Intention to help Saudi Arabia students learn computer skills

In this project, the Alsafeer software is proposed to help with computer literacy in Saudi Arabia. The program focuses on middle school students in Saudi Arabia. I have been blessed with being a recipient of the King Abdullah scholarship and have been granted an opportunity to study abroad and broaden my horizons. As JFK said in his Inaugural address “ask not what your country can do for you—ask what you can do for your country”. These words have truly resonated with me. The whole purpose behind my
project is for me to be able to give back to my community. For me to share my gained knowledge with those who need it.

The reason my project is aimed towards middle schools is because the Ministry of Education in Saudi Arabia is considering introducing computer education in middle schools. This would be a great improvement, since computer education doesn't start in schools until the 10th grade. My project and its results could vastly sway this decision in a positive way. This kind of change to the curriculum would increase students’ computer literacy by the time they enter high school.

4.2 DEVELOPMENT METHODOLOGY

As mentioned in Chapter Three, Alsafeer software is a relatively small software project and the requirements are fixed and clearly stated. Because there is a single author, the work flows from communication to deployment in a linear manner. So, the appropriate process model or paradigm of software development that will be used is the waterfall model (linear-sequential life cycle model). In this paradigm, each stage is completed in sequential or consecutive order and reviews its outputs before proceeding to the next stage.

In the Alsafeer software development and implementation process, each phase was accomplished fully before the next stage was started. At the end of each stage, a check was executed to determine if the application was on the correct path and whether or not to hold or discard the project. In other words, Alsafeer software phases do not overlap or interlock.
There are many reasons that encourage using this process model to develop and create Alsafeer software, such as:

- Requirements of the software are very obvious, steady and well known.
- There are no vague requirements
- The application is short.

The phases of the project are: Requirements analysis, Design, Implementation, Testing, Installation, and Maintenance.

### 4.2.1 Requirements analysis and specification

In this section, Alsafeer software project requirements will be described including specifications containing functional and non-functional requirements. Moreover, it will focus the requirements engineering process.

#### 4.2.1.1 User Characteristics and Target Audience

The Alsafeer software project Target Audience will include students, and computer illiterates – beginner computer users (within roughly 18 and 40 age range). There are different kinds of beginner computer users (regardless of age, gender). Such as:

- A home user: A user uses the computer for business communications and personal communication, such as, to keep in contact friends who live far away, and with family members.
- A Small Office/Home Office (SOHO) user: includes any company to help the employees and the taskmaster to keep in contact easily, and people use the computer in their work.

### 4.2.1.2 User and System Functional Requirements

**Table 1: user and System Functional Requirements**

<table>
<thead>
<tr>
<th>Requirement ID</th>
<th>Requirement Description</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1.</td>
<td>The system shall display all categories in the first form (learn windows, learn word 2007, learn PowerPoint 2007, learn excel 2007, learn internet).</td>
<td>1</td>
</tr>
<tr>
<td>R3.1.</td>
<td>• The system shall allow the user to select which category he wants.</td>
<td>1</td>
</tr>
<tr>
<td>R2.</td>
<td>The system shall display a list of Subcategories (referred to as articles) that relates to the selected category.</td>
<td>1</td>
</tr>
<tr>
<td>R2.1.</td>
<td>• The user shall select a Subcategory and review the slides.</td>
<td>1</td>
</tr>
</tbody>
</table>
### R3.
The user can take a special exercise that relayed under learn windows category to learn how to use the computer mouse.

<table>
<thead>
<tr>
<th>R3.1.</th>
<th>The user can take an exercise about “how to single-click on the mouse”</th>
</tr>
</thead>
<tbody>
<tr>
<td>R3.2.</td>
<td>The user can take an exercise about “how to Double-click on the mouse”</td>
</tr>
<tr>
<td>R3.3.</td>
<td>The user can take an exercise about “how to drag and drop”</td>
</tr>
</tbody>
</table>

### R4.
The user can take an exam to evaluate his level after training

- The system will show the exam result

### Input and Output

1. Inputs:
   - User selection (a category, a Subcategory, an exam)

2. Outputs:
   - The evaluation of the user in the mouse training
   - The evaluation of the user in the exams
### 4.2.1.3 Non-Functional Requirements

#### Table 2: Non-Functional Requirements

<table>
<thead>
<tr>
<th>Requirement ID</th>
<th>Requirement Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R5.</td>
<td>Response Time or processing times: response times will be acceptable for the system users</td>
</tr>
<tr>
<td>R6.</td>
<td>The system will be reliable, secure and usable as well as available, safe, efficient and flexible</td>
</tr>
</tbody>
</table>

### 4.2.1.4 Software Requirements

#### Table 3: Software requirements

<table>
<thead>
<tr>
<th>Requirement ID</th>
<th>Requirement Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R7.</td>
<td>Assistant software: Smart Draw Version 7.00</td>
</tr>
</tbody>
</table>

### 4.2.1.5 Hardware Requirements
Table 4: hardware requirements

<table>
<thead>
<tr>
<th>Requirement ID</th>
<th>Requirement Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R17</td>
<td>Processor: Pentium 4.0(1.6 GHz) and Higher</td>
</tr>
<tr>
<td>R18</td>
<td>Memory: 512 MB</td>
</tr>
</tbody>
</table>

4.2.2 Design

This chapter describes the Alsafeer software design models containing interface, architectural, and component level design. These models were used here to analyze the system.

4.2.2.1 Architectural Design

4.2.2.1.1 Architectural Context Diagram

Alsafeer software has three types of external entities. They are:

- User entity
- Maintenance
- Database (MS Access)
4.2.2.1.2 Component level Design

In this section, the software- will be represented using pseudo-code -an unofficial high-level description of a computer program and its related flowchart will be shown in the figure at section 2.5.3 below.

- IF the system begins running
  - Select a category
  - Select subcategories (article).
  - Review the slides
  - Take an exercise or an exam (optional)
- ENDF

4.2.2.1.3 Interface Design

The GUI (Graphical User Interface) will be described at section 4.5.
This section describes the implementation of the Alsafeer software. To build the system, Microsoft Visual Studio 2010 was used, which provides programming in C#.net language. The code below shows the implementation of the home page as an example and also some code which will be explained in section 4.5.2

```csharp
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Windows.Forms;
using System.Data.OleDb;

namespace LearnComputer
{
    public partial class home : Form
    {
        public static String connstr;
        public static String appPath;
        public static string DirProject()
```
```csharp
{
    string DirDebug = System.IO.Directory.GetCurrentDirectory();

    string DirProject = DirDebug;

    for (int counter_slash = 0; counter_slash < 2; counter_slash++)
    {
        DirProject = DirProject.Substring(0, DirProject.LastIndexOf(@"\"));
    }

    return DirProject;
}

public home()
{
    appPath = System.IO.Path.GetDirectoryName(Application.ExecutablePath)
    appPath = DirProject() + "\db";
    connstr = @"Provider=Microsoft.Jet.OLEDB.4.0;Data Source=" + appPath + "\mydb.mdb;Persist Security Info=True";

    InitializeComponent();
}

private void linkLabel1_LinkClicked(object sender,
LinkLabelLinkClickedEventArgs e)
{
}
```
int x = 0;

private void home_Load(object sender, EventArgs e)
{
    Form4 f4 = new Form4();
    f4.ShowDialog();

    var con = new OleDbConnection(connstr);
    OleDbDataReader dr;
    OleDbCommand cmd = new OleDbCommand("SELECT CatID, CatDesc, Edesc FROM CatTBL", con);
    con.Open();
    dr = cmd.ExecuteReader();
    int i=0;

    while (dr.Read())
    {
        ToolTip ToolTip1 = new System.Windows.Forms.ToolTip();
        Button dynamicButton = new Button();
        int h = this.Width - 50 * (i+1)-300;
        int w = 50 *( i+1);
        dynamicButton.Location = new Point(h, w);
dynamicButton.Height = 40;
dynamicButton.Width = 300;
dynamicButton.BackColor = Color.Gray;
dynamicButton.ForeColor = Color.Blue;
ToolTip1.SetToolTip(dynamicButton, dr["eDesc"].ToString());
dynamicButton.Text = dr["CatDesc"].ToString();
dynamicButton.Name = "DynamicButton";
dynamicButton.Font = new Font("Georgia", 16);
dynamicButton.Tag = dr["CatID"].ToString();

dynamicButton.Click += new EventHandler(DynamicButton_Click);
Controls.Add(dynamicButton);
i++;
}
con.Close();

private void DynamicButton_Click(object sender, EventArgs e)
{
    Button button = sender as Button;
    first_page a = new first_page(button.Tag.ToString());
a.ShowDialog();
}
private void button1_Click(object sender, EventArgs e)
{
    Form2 f2 = new Form2();
    f2.ShowDialog();
}

private void button2_Click(object sender, EventArgs e)
{
    EditorTestForm ed = new EditorTestForm();
    ed.ShowDialog();
}

}
4.2.4 Testing

This section describes how each kind of test was performed.

4.2.4.1 Unit testing

During the coding and implementation process, each function (method) was tested to find the bugs and all types of errors (Syntax Errors and Logical Errors) and then fix the code errors. Each method has expected output for specified inputs, and the actual output is measured and compared with the expected output to validate the method. If they are not the same outputs, this means there is an error which must be fixed by debugging the code. On the other hand, if they are the same then this means the method has worked properly.

4.2.4.2 Integration testing

After unit testing was done on the functions one by one, some methods were integrated to create one component (referred to as a module). Then testing was carried out on the previously integrated functions to discover other bugs. Each module output is tested against the expected output, and then an actual comparison is done between the outputs with the expected outputs. Then, it is integrated with other components and tested until all project components have been integrated and tested.
The program operation will be described in section 4.5.

4.3 LANGUAGE SELECTED

The C# language is an object-oriented, high level, general-purpose, simple, multi-paradigm (multi-purpose) programming language including strongly typed, declarative, class-based (object-oriented), boost for the concepts of inheritance, polymorphism, and encapsulation, and efficient. C# is designed for enhancing productivity in the applications development. C# makes designing and developing solutions simpler and faster, and appropriate for a wide assortment of development requirements [27].

C# language was chosen to develop and implement the Alsafeer software, due to its features and advantages. They can be summarized as follows:

- C# integrates the flexibility and power of C++ language with the naivety of Visual Basic language.
- C# is a type-safe and well-designed that allows building and developing a sturdy and secure application that is run-able on the Microsoft .NET Framework (platform).

Common Advantages of C# (C Sharp):

There are many of common of advantages of C# language. Such as:

- C# supports operator overloading (one of the object-oriented concepts)which is not allowed in some programming languages such as VB.NET
- C# allows nested classes concept which are not available in C and C++ languages
Microsoft Visual Studio is an environment used for software development (integrated also referred to as development environment (IDE)). It is utilized to develop Software products, Graphical User Interface (GUI) and console projects and applications along with websites, web services, Windows Mobile applications, Windows Forms, and web applications. Visual Studio also contains diverse extra tools for software development, such as Visual SourceSafe [28].

Common Advantages of Microsoft Visual Studio:

- Code editor: it contains a code editor that supports automatically code completion and code syntax highlighting for functions, variables, and built-in functions in addition to that, language constructs such as queries and loops.
- Debugger: Visual Studio contains a debugging tool that runs both as a machine-level (low-level) debugging tool and as a source-level (symbolic) debugging tool.

4.4 ACCEPTANCE TESTING

The questionnaires are created to determine if the software meets the goals that it is designed by eliciting responses from the users to measure how useable the program is, and whether or not it is effective in e-learning computer skills. Additionally, interviews with the teachers are used to measure the effectiveness of the software.

As mentioned in Chapter 3, Questionnaires were used to elicit feedback from students who had used the Alsafeer Software. Sample of the Questionnaires can be found
in Appendix A, B. The questions were directed towards understanding how well the students liked the software and learned computer literacy.

The second part of the acceptance strategy is to interview the instructors at the middle schools where the software was distributed. The goal in conducting interview with the instructors was to gain an understanding of their view for how well they could teach using the Alsafeer software.

4.5 PROGRAM OPERATION

In this section, we will analyze the designed application; figure 2 below shows the database schema.

![Database Schema Diagram](image-url)

**Figure 3:** the database schema
4.5.1 ENTITY – RELATIONSHIP DIAGRAM

An ER diagram is a graphical representation of the data that can be captured by a database; it illustrates the logical structure of databases.

There are three fundamental elements in the Entity-Relationship Diagram:

- **Entity** is an atomic object that requires to be represented in the database.
  - Attributes are the information that was collected about the entities. In other words, it is the properties of an entity.
  - Relationships provide the structure needed to draw data from various entities, in other words, it is an association among multiple entities that requires to be represented in the database.

Developing an ERD needs a comprehending of the framework and its components. Picturesque representation of entities and their relationships to each other, usually utilized in computing in regard to the regulation of data within information or databases systems. An entity is a piece of data. A relationship is how the data is participated between entities. And there are 3 types of relationships: One-To-One (1:1), One-To-Many (1: N), and Many-To-Many (M: N). The table below shows the Entity Relationship Diagram Notations that used to develop Alsafeer software ERD.

**Table 5: Entity Relationship Diagram Notations**

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Symbol Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Entity Symbol" /></td>
<td>Entity</td>
</tr>
</tbody>
</table>
The figure 3 below, shows the Entity-Relationship Diagram (ERD) of the database that used in Alsafeer software, as shown below, there are 4 entities, they are: CatTBL, ArticleTBL, SlideTBL, and ExamTbl. Each entity has some attributes, as follows:

CatTBL attributes are:

- CatID
- CatDesc
- Edesc

ArticleTBL attributes are:

- ArtID
- CatId
- Title
- Etitle

SlideTBL attributes are:

- SlideID
- ArtId
- aSlide
ExamTbl attributes are:

- QID
- Question
- Img
- x1
- y1
- x2
- y2
- CatId
Figure 4: Entity-Relationship Model
4.5.2 DATA FLOW DIAGRAM

Figure 5: DATA FLOW DIAGRAM
We will describe the Software and Implementation of our tool. The features or Requirements that were achieved by our tool, how the graphical user interface (GUI) was designed and developed, each “button” in the GUI will be talked about and discussed, how it was design, what is its function. Moreover, in this section we will talk about program structure and design; in other words, all the activities involved in implementing, developing, and designing the system.

As known in C# Windows application, the program will begin running from “Program.cs” file, this file contains the main function, when the application begins executing, as shown in figure 5 below the application will start by “home” form.

![Figure 6: main function](image)

Then, “home.cs” page will be called, and will begin at “home_load” function, this function creates an object of type “form4”, this object will display the welcome page, as shown in figure below.

```csharp
private void home_Load(object sender, EventArgs e)
{
    Form4 f4 = new Form4();
    f4.ShowDialog();
}
```

![Figure 7: home_load function](image)
This form contains a timer, and will be hidden after 2 seconds, as shown in the figure below the timer. Interval was set to 2 seconds (2000 milliseconds).
After that, Graphical user interface for home page will be shown, as in figure 9 below, the form components (buttons), will be displayed by the code at run-time; in other words, it is a dynamic buttons, the figure 10 shows how these buttons were created, firstly, the buttons text was retrieved from the database; table CatTBL, then create a Button object, and Set Button properties, then Set background and foreground, and finally, Add a Button Click Event handler.
Figure 10: Graphical user interface for home page.
If the user clicks on a specific button, then “DynamicButton_Click” function will be executed, this function contains these line codes, create an object of type “first_page” and send a button tag was previously created.

```
Button button = sender as Button;
first_page a = new first_page(button.Tag.ToString());
a.ShowDialog();
```

Figure 12: “DynamicButton_Click” function

All buttons in the “first_page” were also created at run-time- except some buttons were statically created, not at run-time; they are: back, next, and previous buttons ,when the user selects “تعلم وتدوزز (Windows7)” -Learning Windows 7 -category , then the first section “ماهو الحاسوب”- What is the Computer -will be displayed to the user ,
there are 5 sections in this form. They are:

- What is the Computer
- Hardware
- software
- Windows7
- Mouse

The figures below shows an example of the Alsafeer software, “how to use the mouse”

This GUI window will be displayed when the user select:

As shown in the figure above, there are two buttons in this form: -"تدريب"-exercise and -"العودة"-Back. When the button "العودة"-Back. is clicked, then the user will redirect to the previous form, and when the button "تدريب – exercise is clicked, then the user will redirect to a new form as shown in the form below.
This exercise to train the user on how to single-click and Double-click on the mouse, usually the mouse is configured to use the single-click to select an item and Double-click to open an item such as file or folder. Figure 13 above, show a single-click exercise, when the user click on the red rectangle (in the figure), its color will be converted to blue as shown in figure 14 below.
Figure 15 below, show a double-click exercise, train the user to press a mouse button twice quickly without moving the mouse, when the user double-clicks on the red rectangle (in the figure), its color will be converted to blue.

Figure 16: ("Search for the rectangle in the mouse screenshot")
Figure 16 below, shows a drag and drop exercise, to train the user to select a virtual object such as file on the desktop, by "grabbing" it and dragging it to a different place or onto another object, the red-rectangle will be located initially on the left side of the form, then the user tries to move it to right side.

Figure 17: ("القرة" section: drag and drop)

As the example previously displayed, there will be a similar exercises for each of the sections that are taught.
CHAPTER FIVE: SURVEY RESULTS

This chapter will explain the Survey result of the thesis, data was organized in tables, and then these data was represented by charts - diagrammatic representation of data- to ease understanding of these data.

5. 1 Pre-Test Results

Table 6: Class sections

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>36</td>
<td>51.4</td>
</tr>
<tr>
<td>2</td>
<td>34</td>
<td>48.6</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 3 below, shows the data (Frequency and Percent) that generated after this question was asked “Do you have access to a computer at home”. On the other hand, figure 17 shows a bar chart that represents the Frequency and Percent for the same question.

Table 7: the Frequency and Percent of “Do you have access to a computer at home” question

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>42</td>
<td>60.0</td>
</tr>
<tr>
<td>No</td>
<td>28</td>
<td>40.0</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Figure 18: A chart represents the Frequency and Percent of “Do you have access to a computer at home” question

Table 4 below, shows the data (Frequency and Percent) that generated after this question was asked “How long have you received theoretical lectures on using the computer?” On the other hand, figure 18 shows a bar chart that represents the Frequency and Percent for the same question.

Table 8: the Frequency and Percent of “How long have you received theoretical lectures on using the computer?” question

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-6 months</td>
<td>24</td>
</tr>
<tr>
<td>6 months-1 year</td>
<td>18</td>
</tr>
<tr>
<td>1 year-2 years</td>
<td>19</td>
</tr>
<tr>
<td>2 years-5 years</td>
<td>5</td>
</tr>
<tr>
<td>More than 5 years</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
</tr>
</tbody>
</table>
Figure 19: A chart represents the Frequency and Percent of “How long have you received theoretical lectures on using the computer” question

Table 5 below, shows the data (Frequency and Percent) that generated after this question was asked “From your point of view, do you see that traditional computer education is successful?” Figure 19 below shows a bar chart that represents the Frequency and Percent for the same question.
Table 9: the Frequency and Percent of “From your point of view, do you see that traditional computer education is successful?” question

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>46</td>
<td>65.7</td>
</tr>
<tr>
<td>Yes</td>
<td>24</td>
<td>34.3</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Figure 20: A chart represents the Frequency and Percent of “From your point of view, do you see that traditional computer education is successful?” question
Table 6 below, shows the data (Frequency and Percent) generated from this question was asked “From your point of view as a student, what is the success rate of traditional computer education?” On the other hand, figure 20 shows a bar chart that represents the Frequency and Percent for the same question.

**Table 10: the Frequency and Percent of “From your point of view as a student, what is the success rate of traditional computer education?” question**

<table>
<thead>
<tr>
<th>Range</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%-30%</td>
<td>35</td>
<td>41.4</td>
</tr>
<tr>
<td>30%-50%</td>
<td>9</td>
<td>12.9</td>
</tr>
<tr>
<td>50%-70%</td>
<td>5</td>
<td>7.1</td>
</tr>
<tr>
<td>70%-85%</td>
<td>5</td>
<td>15.7</td>
</tr>
<tr>
<td>85%-100%</td>
<td>16</td>
<td>22.9</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Figure 21: A chart represents the Frequency and Percent of “From your point of view as a student, what is the success rate of traditional computer education?” question.

Table 7 below, shows the data (Frequency and Percent) from this question “Of the methods listed below, what are some ways to attract students to learn about computer?”

On the other hand, figure 21 shows a bar chart that represents the Frequency and Percent for the same question.
Table 11: the Frequency and Percent of “Of the methods listed below, what are some ways to attract students to learn about computer?” question

<table>
<thead>
<tr>
<th>Method Description</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education traditionally by giving a full course theoretically</td>
<td>8</td>
<td>11.4</td>
</tr>
<tr>
<td>Education by giving an hour theoretically and then work on a lab</td>
<td>33</td>
<td>47.1</td>
</tr>
<tr>
<td>Education by showing examples and doing live demos.</td>
<td>29</td>
<td>41.4</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Figure 22: A chart represents the Frequency and Percent of “Of the methods listed below, what are some ways to attract students to learn about computer?” question
### Table 12: Pre test

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Dimension</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>Measure the level of using Power Point (pre)</td>
<td>2.35</td>
<td>.382</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Evaluation for using computer skill (pre)</td>
<td>2.40</td>
<td>.370</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Measuring the level of students using computers (pre)</td>
<td>2.37</td>
<td>.329</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>Measure the level of usage of Microsoft Word (pre)</td>
<td>2.45</td>
<td>.360</td>
</tr>
</tbody>
</table>

**pre-test** 2.38 .299

### Table 13: Measuring the level of students usage of computers (pre)

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Item</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>Knowing the differences between Software and Hardware.</td>
<td>2.53</td>
<td>.607</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Knowledge about the areas of computer's use and the extent of its spread.</td>
<td>2.50</td>
<td>.558</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>Knowing information about using Internet' skills like search and sending emails.</td>
<td>2.47</td>
<td>.607</td>
</tr>
<tr>
<td>4</td>
<td>10.</td>
<td>Knowing how to print a Picture or a document</td>
<td>2.44</td>
<td>.581</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>Knowing the differences between input and output devices</td>
<td>2.41</td>
<td>.551</td>
</tr>
<tr>
<td>Rank</td>
<td>No.</td>
<td>Item</td>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td>------</td>
<td>-----</td>
<td>----------------------------------------------------------------------</td>
<td>------</td>
<td>----------------</td>
</tr>
<tr>
<td>1</td>
<td>2.</td>
<td>The ability to compress and decompress the folder</td>
<td>2.57</td>
<td>.579</td>
</tr>
<tr>
<td>2</td>
<td>1.</td>
<td>The ability to clean the recycle bin.</td>
<td>2.36</td>
<td>.591</td>
</tr>
<tr>
<td>3</td>
<td>3.</td>
<td>The ability to change the size of icons on desktop</td>
<td>2.36</td>
<td>.512</td>
</tr>
</tbody>
</table>

Table 14: Evaluation for computer usage skill (pre)
<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Item</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>The ability to paste and edit text</td>
<td>2.44</td>
<td>.605</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>The ability to find a term or a specific word inside of text</td>
<td>2.41</td>
<td>.577</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>The ability to add a title in a specific format</td>
<td>2.40</td>
<td>.549</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>The ability to use the spell checker efficiently</td>
<td>2.40</td>
<td>.575</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>The ability to insert picture and change its size and place</td>
<td>2.36</td>
<td>.615</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>The ability to format the page by changing its color or adding page number</td>
<td>2.27</td>
<td>.588</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measure the level of using Microsoft Word (pre)</td>
<td>2.45</td>
<td>.360</td>
</tr>
</tbody>
</table>
### Table 16: Measure the level of using Power Point (pre)

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Item</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>The ability to change the style of a slide presentation</td>
<td>2.64</td>
<td>.591</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>The ability to change slide layout like assign it as a title slide</td>
<td>2.54</td>
<td>.630</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>The ability to add and delete slides</td>
<td>2.50</td>
<td>.584</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Assign uniform background segments</td>
<td>2.49</td>
<td>.583</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>The ability to change the font's type and color</td>
<td>2.40</td>
<td>.575</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>Adding a chart for a slide</td>
<td>2.37</td>
<td>.618</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measure the level of using Power Point (pre)</td>
<td>2.35</td>
<td>.382</td>
</tr>
</tbody>
</table>
5. 2 Post-Test Results

Table 13 below, shows the data (Frequency and Percent) generated from this question was asked “Has the program put the information in a clear way for you?” On the other hand, figure 22 shows a bar chart that represents the Frequency and Percent for the same question.

Table 17: the Frequency and Percent of “Has the program put the information in a clear way for you?” question

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>69</td>
<td>98.6</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Figure 23: A chart represents the Frequency and Percent of “Has the program put the information in a clear way for you?” question
Table 14 below, shows the data (Frequency and Percent) that generated after this question was asked “To what extent is the program useful for you after working on it” On the other hand; figure 23 shows a bar chart that represents the Frequency and Percent for the same question.

Table 18: the Frequency and Percent of “To what extent is the program useful for you after working on it” question

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%-70%</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>70%-85%</td>
<td>35</td>
<td>50.0</td>
</tr>
<tr>
<td>85%-100%</td>
<td>33</td>
<td>47.1</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Figure 24: A chart represents the Frequency and Percent of “To what extent is program useful for you after working on it” question

Table 15 below, shows the data (Frequency and Percent) from this question “To what extent did the program illustrate the importance of materials for you?” On the other hand, figure 24 shows a bar chart that represents the Frequency and Percent for the same question.

Table 19: the Frequency and Percent of “to what extent did the program illustrate the importance of materials for you?” question

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%-70%</td>
<td>3</td>
<td>4.3</td>
</tr>
<tr>
<td>70%-85%</td>
<td>30</td>
<td>42.9</td>
</tr>
<tr>
<td>85%-100%</td>
<td>37</td>
<td>52.9</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Figure 25: A chart represents the Frequency and Percent of “to what extent did the program illustrate the importance of materials for you?” question.

Table 16 below, shows the data (Frequency and Percent) from this question “Did the images and instructions make your learning experience easy?” On the other hand, figure 25 shows a bar chart that represents the Frequency and Percent for the same question.

Table 20: the Frequency and Percent of “Did the images and instructions make your learning experience easy?” question

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>70%-85%</td>
<td>68</td>
<td>97.1</td>
</tr>
<tr>
<td>85%-100%</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 17 below, shows the data (Frequency and Percent) from this question “What is your evaluation for the program based on the benefit that you got?” On the other hand, figure 26 shows a bar chart that represents the Frequency and Percent for the same question.

Table 21: the Frequency and Percent of “What is your evaluation for the program based on the benefit that you got?” question

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%-70%</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>70%-85%</td>
<td>30</td>
<td>42.9</td>
</tr>
<tr>
<td>85%-100%</td>
<td>38</td>
<td>54.3</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Figure 27: A chart represents the Frequency and Percent of “What is your evaluation for the program based on the benefit that you got?” question

Table 22: Post test

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Dimension</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>Measure the level of using Power Point (post)</td>
<td>3.28</td>
<td>.564</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Evaluation for using computer skill (post)</td>
<td>3.27</td>
<td>.567</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Measure the level of usage of Microsoft Word (post)</td>
<td>3.27</td>
<td>.652</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Measuring the level of skills in using computers (post)</td>
<td>3.18</td>
<td>.596</td>
</tr>
<tr>
<td></td>
<td></td>
<td>post – test</td>
<td>3.24</td>
<td>.544</td>
</tr>
</tbody>
</table>
Table 23: Measuring the level of students usage of computers (post)

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Item</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>Knowing more information about storage capacity</td>
<td>3.30</td>
<td>.787</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>The ability to deal with Technical faults</td>
<td>3.26</td>
<td>.793</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>Awareness about the spread of viruses while dealing with external sources for information</td>
<td>3.26</td>
<td>.846</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>Knowing information about using Internet' skills like search and sending emails.</td>
<td>3.21</td>
<td>.778</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>Knowing the differences between Software and Hardware.</td>
<td>3.20</td>
<td>.734</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>Knowing how to print a Picture or a document</td>
<td>3.20</td>
<td>.773</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>Knowing information about Operating Systems</td>
<td>3.19</td>
<td>.822</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Knowledge about the areas of computer's use and the extent of its spread</td>
<td>3.17</td>
<td>.701</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>Knowing the differences between input and output devices</td>
<td>3.16</td>
<td>.792</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>Knowing information about storage media</td>
<td>3.16</td>
<td>.862</td>
</tr>
<tr>
<td>11</td>
<td>12</td>
<td>The ability to identify new device like a camera or a printer</td>
<td>3.16</td>
<td>.942</td>
</tr>
<tr>
<td>12</td>
<td>11</td>
<td>Knowing how to scan a picture to the computer through scanner</td>
<td>2.96</td>
<td>1.028</td>
</tr>
</tbody>
</table>
Measuring the skill level of students using computers (post) 3.18 .596

### Table 24: Evaluation for computer usage skill (post)

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Item</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>The ability to clean the recycle bin.</td>
<td>3.33</td>
<td>.812</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>The ability to change the size of icons on desktop</td>
<td>3.27</td>
<td>.779</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>The ability to run the task manager</td>
<td>3.24</td>
<td>.788</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>The ability to compress and decompress the folder</td>
<td>3.23</td>
<td>.663</td>
</tr>
</tbody>
</table>

Evaluation for using computer skill (post) 3.27 .567

### Table 25: Measure the level of using Microsoft Word (post)

<table>
<thead>
<tr>
<th>Rank</th>
<th>No.</th>
<th>Item</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>The ability to paste and edit the text</td>
<td>3.33</td>
<td>.737</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>The ability to find a term or a specific word inside of text</td>
<td>3.33</td>
<td>.756</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>The ability to add a title in a specific format</td>
<td>3.30</td>
<td>.749</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>The ability to insert a picture and change its size and place</td>
<td>3.26</td>
<td>.846</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>The ability to format the page by changing its</td>
<td>3.26</td>
<td>.896</td>
</tr>
<tr>
<td>Rank</td>
<td>No.</td>
<td>Item</td>
<td>Mean</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td>------</td>
<td>-----</td>
<td>----------------------------------------------------------------------</td>
<td>-------</td>
<td>----------------</td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>The ability to change the font's type and color</td>
<td>3.46</td>
<td>.695</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>Adding a chart for a slide</td>
<td>3.34</td>
<td>.796</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>Assign uniform background segments</td>
<td>3.30</td>
<td>.709</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>The ability to add and delete slides</td>
<td>3.23</td>
<td>.726</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>The ability to change slide layout like assign it as a title slide</td>
<td>3.20</td>
<td>.734</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>The ability to change the style of slide presentation</td>
<td>3.14</td>
<td>.666</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measure the level of using Power Point (post)</td>
<td>3.28</td>
<td>.564</td>
</tr>
</tbody>
</table>
5. 3 The Interviews

The second part of the acceptance testing for the Alsafeer Software was to conduct interviews of the instructors who teach computer literacy to Saudi Arabian Middle School Students. Each instructor was asked a set of questions with the purpose being to assess how effective the Alsafeer Software was in teaching computer literacy. For this reason, I interviewed them and I asked the following questions:

1. What is your overall impression of the Alsafeer Program?
2. Will it fulfill the need for computer literacy training?
3. Is this program an improvement over the methods currently used to teach computer literacy?
4. Did your students try this program? If yes, did your students seem to like the program?
5. What improvements would you make to the program?

First interview:

School: Marwan bin Abdul Malik Middle School in Tathleeth.

Instructor: Mr. Khalid Sultan Alhajri.

1-Mr. Alhajri illustrates that the KSA schools need to such program that help the students learn by themselves
2- I think Alsafeer software will be a good start.
3- In some cases, yes this is a great improvement.
4- Yes, my students have tried the program. Yes, most of the students liked it and a few asked for a copy.
5- I would like for it to cover more topics.
Second interview:

School: Alamoah Middle and High School in Tathleeth

Instructors: Mr. Abdulrhman Alsabaie and Mr. Saeed Mohammed Alaklabi

1- Mr. Alsabaie illustrates that we need to use computers everyday and it is recommended to use it for schools in order to learn the basics of computer skills.

2- I think it covers what they need.

3- I think it is a good aid in class, but there is still a need for an instructor.

4- Yes, we used this program in our class for two weeks. The students enjoyed working with it and this style of teaching.

5- It would be nice if it had a help option.

1-Mr. Alaklabi illustrates that Alsafeer software provides high level of education in a very short time.

2- It covers the basics pretty well.

3- It's a time saver and it keeps the students interested.

4- Yes, we used this program in our class for two weeks. The students preferred the option to learn at their own pace using this software.

5- I would say make the exams more in depth.

Third interview:

School: Imam Shafei Middle School in Tathleeth

Instructors: Abdullah Mohammed Alqahtani.

1- Mr. Alqahtani stated that he believes Alsafeer software has very good potential.

2- It is a good option, but needs improvements before it could fulfill the need for training.
3- I can't say it's an improvement, but it is definitely a good tool.

4- No I have not used it in the classroom yet, but I plan on it.

5- From what I see so far, I think it need to cover more topics. Such as, Microsoft Access.

**Fourth interview:**

**School:** Rafi Ben-Numan Middle School in Riyadh

**Instructors:** Bejad Malahi Alqahtani.

1- Mr. Alqahtani stated his approval for this program and is more than happy to integrate this learning tool in his classroom.

2- This is a great tool that covers the very basics to get student started with computers.

3- This is an improvement to an instructor walking around a classroom trying to explain the basics to every student on their own machine.

4- I have not had time to set it up for my classes yet.

5- I would like for it to cover more topics, and if it taught more short cuts and hot keys to use when working in Microsoft Office software.
CHAPTER SIX: CONCLUSION AND FUTURE WORK

This chapter consists of two sections the first section will explain the conclusion of the thesis, while the second will show the future work.

6.1 Conclusions

Results from the acceptance testing of both students and instructors shows that the Alsafeer software achieved the goals that it was designed for. The data showed that Alsafeer software has improved student’s ability to be more effective in using applications like Microsoft Word 2007 and Excel 2007. Moreover, it has improved their computer skills, and as a result they have become more computer literate.

This project first analyzed computer education in Saudi Arabia and found that computer literacy is lacking within the general Saudi Arabia population. The lack of computer knowledge within Saudi Arabia was the motivation behind the Alsafeer Software to teach computer literacy. As discussed previously, it was decided that Saudi Arabian Middle School Students were the most likely population to benefit from an e-learning computer literacy program. These students needed to eventually learn computer skills and an earlier introduction through the Alsafeer Software, would greatly aide this goal. Ultimately, the expectation is that these students will graduate from school and go on to become computer literate adults able to work and be comfortable with technology.

The Alsafeer software successfully taught the beginner basic computer skills, the basics of Microsoft Word 2007, Excel 2007, and PowerPoint 2007 and Internet concepts. Most important, the Alsafeer software has taught the beginner whose own language is Arabic.
6.2 The limitations and weaknesses

As in most theses and research studies, difficulties were encountered. Such as, the limited time between giving the surveys, and actually getting them back which resulted in an inability to design a more professional product. Another problem I had was the time difference between the U.S. and Saudi Arabia. I often had to stay up late to be able to call the instructors at a good time. Translating the interviews and surveys was a challenge. There are many words in Arabic I had a hard time finding a suitable equivalent in English.

6.3 Future work

The limitations of my thesis suggest a normal direction for future work. Thus, I have focused on expansion of this work, through the following areas:

- Enhancing and developing this work to be a web-based project that can be accessed from anyplace and at anytime; in other words; this project will be transformed from windows form application to web-based application- ASP.NET application.
- Extend the work to include female students in Saudi Arabia.
- Integrate the software into education systems curriculum and be able to accumulate feedback from users through program tracking.
- Enhancing the exercises provided throughout the program.
- Support many languages.
REFERENCES


[22] www.myitlab.com


[24] Williams,k, Literacy and Computer Literacy: Analyzing the NRC’s,2002


APPENDIX A:

First: Personal Information

أولا: البيانات الشخصية

1. Gender

ذكر □ Male

انثى □ Female

2. Age: 

□ 12-16

□ 17-18

3. Education:

□ High School

□ Middle school

Do you have access to a computer at home? 

هل يوجد لدي الطالب كمبيوتر بالبيت مما يمكنه استخدام الكمبيوتر خارج المدرسة؟

نعم □ Yes

لا □ NO
Second: Please answer the following questionnaire by taking into account that the degree of approval is as follows:

<table>
<thead>
<tr>
<th>Questions</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring the level of students usage of computers</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>1. Knowledge about the areas of computer’s use and the extent of its spread</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>2. Knowing the differences between input and output devices</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>3. Knowing more information about storage capacity</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>4. Knowing the differences between Software and Hardware.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

Please select the following from statements by adding ☑ in the appropriate place:

<table>
<thead>
<tr>
<th>الاتجاه</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>ممتاز</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>جيد جدا</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>جيد</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ضعيف</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

كلاً من العبادات التالية يضع علامة ☑ في المكان المناسب.

1. مهتم مبادرات استخدام الحاسوب
2. معرفة الفروق بين وحدات الإدخال والخروج والتعامل معها
3. الأفلام بسعت تخزين
4. معرفة الفروق بين (Hardware, Software)
<table>
<thead>
<tr>
<th></th>
<th>Knowing information about storage media</th>
<th>O</th>
<th>O</th>
<th>O</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Knowing information about Operating System</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>7.</td>
<td>The ability to deal with Technical faults</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>8.</td>
<td>Awareness about the spread of viruses while dealing with external sources for information</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>9.</td>
<td>Knowing information about using Internet’ skills like search and send a email</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>10.</td>
<td>Knowing how to print a Picture or a document</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>11.</td>
<td>Knowing how to scan a picture to the computer through scanner</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>12.</td>
<td>The ability to identify new device like a camera or a printer</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>Evaluation for using computer usage skill:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>The ability to clean the recycle bin.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>2.</td>
<td>The ability to compress and decompress the folder</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Task</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Change the size of icons on desktop</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Run the task manager</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Measure the level of using Microsoft Word</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Paste and edit the text</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Find a term or a specific word inside the text</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Add title in a specific format</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Insert picture and change its size and place</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Use spell checker efficiently</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Format the page by changing its color or adding page number</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Task</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure the level of using PowerPoint</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Add and delete a slide</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Change the style of slide presentation</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Change slide layout like assign it as a title slide</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Assign uniform background segments</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>5</td>
<td>Adding a chart for a slide</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>6</td>
<td>The ability to change the font’s type and color</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

**Third: Please put ☑ at the appropriate answer**

ثالثاً - الرجاء وضع علامة ☑ أمام الإجابة التي تراها مناسبة.

1. **How long have you received theoretical lectures about using the computer?**

   1. منذ متى وانت تتلقى محاضرات استخدام الحاسوب نظرية؟

       ☑ Month - 6 months  من شهر الى 6 أشهر  ☑ 6 months – year  من 6 اشهر الى سنة
2. From your point of view, do you see that traditional computer education is successful?

من وجهة نظرك، هل ترى أن تعليم الحاسوب تقليديا تعليم ناجح؟

- Yes نعم
- No لا

3. From your point of view as a student, what is the success rate of traditional computer education?

من وجهة نظرك كطالب، كم تقدر نسبة نجاح تعليم الحاسوب تقليديا؟

- 10%-30%
- 30%-50%
- 50%-70%
- 70%-85%
- 85%-100%

4. Of the methods listed below, what are some ways to attract students to learn about computers?

من الطرق المذكورة أدناه، ما أكثر طريقة تجذب الطالب لتعلم الحاسوب؟

- Education traditionally by giving a full course theoretically
Education by giving an hour theoretically and then work on a lab
التعليم بإعطاء ساعات معينة نظرية ومن ثم التطبيق عملياً في مختبر الحاسوب.

Education by showing examples and doing live demos.
التعليم الكنزونيا من البداية بحيث يتم شرح المناهج بصورة واضحة ومبسطة الكنزونيا وإعطاء الطلاب بعض المهمات لإجراءها فوراً للترسيخ المعلومات

APPENDIX B:

First: Personal Information

أولا: البيانات الشخصية
1. Gender: الجنس

- Male ذكر
- Female أنثى

2. Age: العمر

- 26 – 35.
- 36 – 45.
- 18 – 25.
- Above 46.

3. Education: مستوى التعليم

- Middle School تعلم متوسط
- High School تعلم ثانوي

4. Experience: الخبرة

- Less than 1 year أقل من سنة
- From 1-5 years من سنة إلى خمس سنوات
- More than 15 years أكثر من 15 سنة
- 6-15 years من خمس سنوات إلى خمسة عشر سنة

Second: Please answer the following questionnaire by taking into account that the degree of approval is as follows:

ثانياً، يُرجى الإجابة عن الأسئلة التالية مع الأخذ بالاعتبار أن درجة الموافقة كالتالي:
<table>
<thead>
<tr>
<th>Questions</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring the level of students usage of computers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Knowledge about the areas of computer’s use and the extent of its spread</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>2. Knowing the differences between input and output devices</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>3. Knowing more information about storage capacity</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>4. Knowing the differences between Software and Hardware.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>5. Knowing information about storage media</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>6. Knowing information about Operating System</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>7. The ability to deal with Technical faults</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>8. Awareness about the spread of viruses while dealing with external sources for information</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>9. Knowing information about using Internet’s skills like search and send a email</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>10. Knowing how to print a Picture or a document</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>11. Knowing how to scan a picture to the computer through scanner</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>12. The ability to identify new device like a camera or a printer</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>Evaluation for using computer usage skill:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1. The ability to clean the recycle bin.</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>2. The ability to compress and decompress the folder</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>3. The ability to change the size of icons on desktop</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>4. The ability to run the task manager (task manager)</strong></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td><strong>Measure the level of using Microsoft Word</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. The ability to clean the recycle bin. (القدرة على تفرير سلة المهملات)
2. The ability to compress and decompress the folder (القدرة على فك ضغط الملف والعكس)
3. The ability to change the size of icons on desktop (القدرة على تغير حجم ايفونات سطح المكتب)
4. The ability to run the task manager (القدرة على تشغيل برنامج المورد)
5. The ability to compress and decompress the folder (القدرة على فك ضغط الملف والعكس)
6. The ability to change the size of icons on desktop (القدرة على تغير حجم ايفونات سطح المكتب)
7. The ability to deal with Technical faults (القدرة على التعامل مع الاعطال الفنية)
8. The ability to compress and decompress the folder (القدرة على فك ضغط الملف والعكس)
9. The ability to deal with Technical faults (القدرة على التعامل مع الاعطال الفنية)
10. The ability to compress and decompress the folder (القدرة على فك ضغط الملف والعكس)
11. The ability to deal with Technical faults (القدرة على التعامل مع الاعطال الفنية)
12. The ability to compress and decompress the folder (القدرة على فك ضغط الملف والعكس)
<table>
<thead>
<tr>
<th></th>
<th>The ability to paste and edit the text</th>
<th>The ability to find a term or a specific word inside the text</th>
<th>The ability to add title in a specific format</th>
<th>The ability to insert picture and change its size and place</th>
<th>The ability to use spell checker efficiently</th>
<th>The ability to format the page by changing its color or adding page number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>2</td>
<td>The ability to delete a slide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>The ability to change the style of slide presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>The ability to change slide layout like assign it as a title slide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Assign uniform background segments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Adding a chart for a slide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Measure the level of using PowerPoint**

1. The ability to add and delete a slide
2. The ability to change the style of slide presentation
3. The ability to change slide layout like assign it as a title slide
4. Assign uniform background segments
5. Adding a chart for a slide

1. The ability to paste and edit the text
2. The ability to find a term or a specific word inside the text
3. The ability to add title in a specific format
4. The ability to insert picture and change its size and place
5. The ability to use spell checker efficiently
6. The ability to format the page by changing its color or adding page number
6. The ability to change the font’s type and color

<table>
<thead>
<tr>
<th></th>
<th>O</th>
<th>O</th>
<th>O</th>
<th>O</th>
</tr>
</thead>
</table>

Third: Please put ✓ at the appropriate answer

ثالثًا - الرجاء وضع علامة ✓ أمام الإجابة التي تراها مناسبة.

1. Has the program put the information in a clear way for you?

هل قام البرنامج بطرح المعلومة بطريقة واضحة بالنسبة لك؟

☐ Yes نعم ☐ No لا

2. To what extent is the program useful for you after working on it?

ما مدى استفادةك من البرنامج بعد العمل عليه؟

☐ 10%-30% ☐ 30%-50%

☐ 50%-70% ☐ 70%-85% ☐ 85%-100%
3. To what extent did the program illustrate the importance of materials for you?

3. ما مدى توسيع البرنامج بطرح المواد المهمة لك

10%-30%  
30%-50%  
50%-70%  
70%-85%  
85%-100%

4. Did the images and instructions make your learning experience easy?

4. هل دعم البرنامج الشرح بصور وامثلة اوضحت المعلومات لك

Yes  نعم  No  لا

5. What is your evaluation for the program based on the benefit that you got?

5. ما مدى تقييمك للبرنامج استنادا إلى استفاداتك منه.

10%-30%  
30%-50%  
50%-70%  
70%-85%  
85%-100%

VITA

Author: Zieb Rabie Alqahtani

Place of Birth: Tathleeth, Saudi Arabia

Undergraduate Schools Attended: King Khalid University

Degrees Awarded: Bachelor in Computer Science, 2009

Honors and Awards: King Abdullah Scholarship Program