

Palestine Polytechnic University
College of Administrative Science and Informatics
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E-learning
Introduction to Computer Course

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Abstract

Nowadays, when we talk about e-Learning, we mostly mean an on-line class using Web Technology, with the use of Multimedia and Interactive Technology to enhance choice for learners in what and how they learn.

The ultimate aim of this project is to create and develop a new electronic course that will achieve the RUFO and SCORM standards and objectives for the course of Introduction to Computer which is one of the most important university requirements at Palestine Polytechnic University. The system enables the teacher to add, delete and setting the course's material for the purpose of delivering the learning process for the students. In addition, the system allows students to login to the course and doing several processes of browsing, quizzes, downloading, and interacting with their teachers and other people through the forum forms.

In addition to delivering the course's materials, the project aims to create interuniversity network in Palestine through achieving the RUFO objectives, and to produce a reusable course's materials through applying the SCORM standards in that the content of the course can work effectively on other learning environments.

However, the team concludes that e-Learning is seen to be more suited to the delivery of content than to skills building. Hence, eLearning has the capability to enlarge learning skills and facilitate any e-Learners at anywhere and anytime. So, Project team highly recommends implementing the developed e-learning system at PPU.

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Dedication

To those who have dedicated lives giving us the hope for tomorrow..., to those who have enlightened our knowledge road... to our dear fathers...

To those who granted us the tenderness and taught us the patience..., to those whose hearts and souls have given us the protection and power to become what we are now..., to our beloved mothers...

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To our successor ... to the future generations...

To our soul mates who supported us ...To those who are always there when we need them ... to our friends and lovers...

To all of these persons we would like to dedicate this project...

Project team.

Declaration

The project team members hereby declare that this project has been written by them and all the materials that do not belong to them have been identified. So, the team members are ready for any copyright questioning.

Project team.

Table of Content

<i>Cover Page</i>	I
<i>Abstract</i>	II
<i>Acknowledgment</i>	III
<i>Dedication</i>	IV
<i>Declaration</i>	V
<i>Table of Content</i>	VI
<i>List of Tables</i>	X
<i>List of Figures</i>	XI

Chapter One: Introduction

1.1 Introduction:	2
1.2 Definition of Application:	3
1.2.1 System Limitations:	4
1.3 Application Objectives:	4
1.4 Problems:	5
1.5 Solutions:	6
1.6 Learning Alternatives:	6
1.7 Application Scope:	9
1.8 System Importance:	9
1.8.1 System importance to students:	10
1.8.2 System importance to Teacher:	10

Chapter 2: Feasibility Study

2.1 Introduction:	13
2.2 Risks and Solutions:	13
2.2.1 Risks Analysis:	13
2.2.2 Risks Solutions:	13
2.3 System Resources:	14

2.4 Feasibility Study:	18
2.4.1 Technical feasibility:	18
2.4.2 Legal feasibility:	18
2.4.3 Economic feasibility:	18
2.4.4 CD's Resources and Economic Feasibility:	22
2.5 Scheduling:	22
2.4.5 Time Schedule:	22

Chapter 3: Background

3.1 Introduction:	26
3.2 RUFO:	26
3.2.1 RUFO Objectives and Motivations:	27
3.2.2 Palestinian Steering Committee:	27
3.3 E-Learning:	28
3.3.1 What is E-Learning?	28
3.3.2 E-Learning Rules and Guidelines:	29
3.4 SCORM:	29
3.4.1 SCORM Utilities:	30
3.5 MOODLE:	31
3.5.1 Case for Moodle:	31
3.6 Multimedia:	34
3.6.1 Characteristics of a Multimedia System:	34
3.6.2 Some Limitations of Multimedia:	34
3.6.3 What is Hypertext and Hypermedia?	34

Chapter 4: System Analysis

4.1 Introduction:	37
4.2 Traditional System Analysis:	37
4.2.1 Analyses Specification:	38
4.2.2 The Conclusions:	42
4.3 Questioner Analysis:	43
4.3.1 Questioner Analysis Specification:	45
4.3.2 Results of Analyzing:	49

4.4 E-learning System Analysis:	49
4.4.1 How is it different from traditional courses?	50

Chapter 5: Requirements Analysis

5.1 Introduction:	52
5.2 Functional Requirements:	52
5.2.1 Requirements Definition:	52
5.2.2 Requirement Specifications	54
5.3 Non-Functional Requirements:	61
5.3.1 Product Requirements	61
5.3.2 Process Requirements	61
5.3.3 Legislative Requirements	61
5.3.4 Moodle Requirements	62
5.3.5 SCORM Requirements	62

Chapter 6: System Design

6.1 Introduction:	65
6.2 System Context:	65
6.3 Functional Design:	65
6.4 Navigation Map:	67
6.4.1 Introduction:	67
6.4.2 Types of navigation:	67
6.5 Story Boards:	74
6.5.1 Introduction:	74
6.6 Data Dictionary:	79
6.6.1 Image files:	79
6.6.2 Sound file:	80
6.6.3 Video files:	80
6.6 Database Data Dictionary:	81
6.7 Test Plan:	81

Chapter7: System Implementation

7.1 Introduction:	84
7.2 System Implementation's Infrastructure:	84
7.3 Setting up the Required H/W and S/W:	85
7.4 MOODLE Implementation:	99
7.5 Operating the system:	103

Chapter8: Testing

8.1 Introduction:	105
8.2 System Testing:	105
8.2.1 Unit Testing:	106
8.2.2 Subsystem Testing:	106
8.2.3 Integration Testing:	107
8.2.3.1 Alpha Testing:.....	107
8.2.3.2 Beta Testing:	107
8.2.4 Acceptance Testing:	107
8.3 Snapshots:	108
8.3.1 Moodle site Snapshot:	108
8.3.2 CD's Snapshot:	113
8.4 System Evaluation:	116
8.5 Systems Maintenance	117

Chapter9: Conclusions and Recommendations

9.1 Introduction:	119
9.2 Conclusions:	119
9.2.1 Skills:	120
9.3 Recommendations:	120
References	121

List of Tables

TABLE 2.1 Development Hardware Cost.....	15
TABLE 2.2 Development Book Resources.....	16
TABLE 2.3 Operational Hardware Resources.....	17
TABLE 2.4 Development Hardware Cost.....	19
TABLE 2.5 Development Software Cost.....	19
TABLE 2.6 Development Human Costs.....	20
TABLE 2.7 Development Book Costs.....	20
TABLE 2.8 Operational Hardware Costs.....	20
TABLE 2.9 Operational Software Costs.....	21
TABLE 2.10 Total Development Costs.....	21
TABLE 2.11 Total Operational Costs.....	21
TABLE 4.1 Questioner's Analyses.....	45
TABEL 4.2 E-learning versus Traditional Learning.....	50
TABLE 6.1 External Database Table.....	81

List of Figures

Figure 1.1 PPU Organizational Chart.....	9
Figure 2.1 Gant chart for proposed time schedule.....	23
Figure 2.2 Gant chart for actual time schedule.....	24
Figure 3.1 Hypertext.....	35
Figure 3.2 Hypertext.....	35
Figure 3.3 Hypermedia.....	35
Figure 6.1 System Context Diagram.....	65
Figure 6.2 Moodle Login Flowchart.....	66
Figure 6.3 Moodle Login Navigation Map.....	68
Figure 6.4 Administrator's Navigation Map.....	69
Figure 6.5 Teacher's Navigation Map.....	70
Figure 6.6 Student's Navigation Map.....	71
Figure 6.7 Guest's Navigation Map.....	72
Figure 6.8 CD's Navigation Map.....	73
Figure 6.9 Staring Screen Story Board.....	74
Figure 6.10 Moodle Page Story Board.....	75
Figure 6.11 Course's Page Story Board.....	76
Figure 6.12 Story Boad of CD's Starting Page.....	77
Figure 6.13 Story Boad of CD's Starting Page.....	78
Figure 6.14 Example of CD's Story Board.....	79
Figure 7.1 Creating Data Base Table.....	87
Figure7.2 Selecting VB Windows Application.....	88
Figure7.3 Creating and Naming VB Windows Application.....	89
Figure7.4 Macromedia Flash Page.....	89
Figure7.5 Selecting TurboDemo New Project.....	90
Figure7.6 Starting TurboDemo New Project.....	91
Figure7.7 Selecting New Captivate Page.....	92
Figure7.8 Starting Photoshop Page.....	93
Figure7.9 VRML Design Page.....	94
Figure7.10 VRML Run Page.....	94
Figure7.11 Starting Adobe Acrobat Reader Page.....	96
Figure7.12 Starting Windows Media Player Program.....	97

Figure 7.13 Starting AutoRun Program.....	98
Figure 7.14 connecting to MySQL.	100
Figure 8.2 Moodle Home Page	109
Figure 8.3 Moodle Login Page	109
Figure 8.4 Snapshot of Introduction to Computer course.....	110
Figure 8.5 Material Web Page.	111
Figure 8.6 Moodle Chat Room Page.....	111
Figure 8.7 Moodle Glossary Page.....	112
Figure 8.8 Moodle Quiz Page.	112
Figure 8.9 CD's main page.....	113
Figure 8.10 Chapter One Screen.....	113
Figure 8.11 Chapter Two Screen	114
Figure 8.12 Chapter Three Screen.	114
Figure 8.13 Chapter Four Screen	115
Figure 8.14 Chapter Five Screen	115
Figure 8.15 Chapter Six Screen	116

Introduction

- *Introduction.*
- *Definition of Application.*
- *Application objectives.*
- *Problems.*
- *Solutions.*
- *Learning alternatives.*
- *Application Scope.*
- *System importance.*

1.1 Introduction:

With the growing number of on-line courses, the increasing accessibility of computers, the rapid growth of internet and intranets, and the increasing number of computer users, students of all ages are taking advantages of distance learning / distance education or are using computers to enhance traditional classroom experience. E-Learning, which describes the use of Web or Internet technologies to enhance teaching and learning experience, is therefore a suitable solution to encourage education to anyone, anywhere, at anytime. In addition, the overall operating costs for the national education system can be reduced once the e-Learning systems have been implemented.

There is a growing recognition that traditional forms of learning are not going to be sufficient to meet the needs and expectations of people. New ways to learn and access learning will be an essential foundation to knowledge and information based economy and society, and the key to future prosperity and well-being.

The combination of technology, the Internet, and learning offers the potential for far wider access to learning than has been possible in the past, and enhanced choice for learners in what and how they learn.

As a result, e-Learning systems increase the student's opportunities in developing their knowledge by supporting them with different options of learning process including browsing, exams, social interaction with other people from different countries and many other tools of learning process. [6]

This project mainly focuses on e-Learning and educational divide, in order to increase the interaction between students, teachers, peoples and universities, which conforms to the main purpose of RUFO idea to create an interuniversity network in Palestine to achieve a development in the fields of Open and Distance Learning.

The aim of this project is to implement the SCORM standards which are a collection of standards and specifications for organizing and delivering Web-based e-

learning contents that the team wants to implement onto the Introduction to Computer course. Such course is considered to be one of the most important PPU courses that require to be implemented by using a Moodle software package designed to help educators create online courses with about 34 languages.

1.2 Definition of Application:

Following the huge evolution in information technology, telecommunication & networks, then internet has become one of the most fundamental administrative recourse in companies all over the world. It provides a lot of services and applications that have been created for different persons. Therefore, companies have used the web communications for training and education purposes and this has helped students, companies, schools and universities in their work.

Since then, Palestine Polytechnic University has been one of the universities participating in RUFO project that concerns the electronic learning for universities. Therefore, the project team has adapted the PPU suggestion of developing the Introduction to Computer course by its own graduating students in order to achieve the RUFO goals and objectives. Then the team starts working on this project of producing a new electronic site for Introduction to Computer course which is one of the most important courses that providing the students with the main essential basic information about computer and Information Technology.

The project team has used multimedia options as a supported and attractive way to convey the information and learning contents. This has forced the team to change the content of the previous course in an attempt to update the information to cope with the term of e-learning course.

We can say that e-learning techniques have many advantages that compete the traditional way of learning. So the advantages of e-learning can be classified as follows:

- E-Learning means that you no longer need to spend long periods travelling to a location to attend a course; you can now have access to learning when you want

it, at the time you want it – day or night, wherever you want it – at home, at work, in your local library.

- E-Learning means that learning no longer needs to be a passive experience, with the learners all sitting in front of the teacher and “learning by telling”, as e-learning makes learning an active experience.
- E-Learning makes learning exciting, engaging and compelling. Hard and boring subjects can be made easier, more interesting and appealing with e-learning.
- Learning is a social activity, and e-learning means that powerful and enduring learning experiences can be achieved, not just through content, but through the use of online communities and networks.
- E-Learning empowers learners to manage their own learning and in the most appropriate way for each learner; we all learn in different ways - reading, watching, exploring, researching, interacting, doing, communicating, collaborating, discussing, and sharing knowledge and experiences.
- E-Learning, also help in embedding learning within work processes, as organisations begin to recognise that learning is not something that only takes place in a classroom.
- Learning has moved from the classroom onto the desktop and now into the pocket.[7]

1.2.1 System Limitations:

1. Internet accessibility is limited specially which depending on the telephone lines.
2. Telecommunications bandwidth and network capacity are insufficient.

1.3 Application Objectives:

The system will be designed to develop an e-learning application for Introduction to Computer Science course that is one of the university requirements courses in Palestine Polytechnic University. The main objectives of this system are:

1. Developing a secured system that provides flexibility for studying in terms of time and location, in addition to enabling students to conduct real time learning remotely over the web.

2. Providing effective feedback to increase students' awareness of key areas that they need in order to increase their knowledge.
3. Giving high quality to a learning course supported with images, sound, video and animations to provide an effective e-learning course.
4. Providing an interactive contact between students and teachers.
5. Remotely control and updating the course contents.
6. Applying an e-learning standard that will be synchronized with the term of "e-learning" to produce a distinct and a special e-learning course by implementing the SCORM (Sharable Content Object Reference) standards.

1.4 Problems:

The existing system is suffering from several problems such as:

1. Traditional learning techniques need more effort and time especially in traveling between the required learning sites.
2. The Large number of students in the learning class.
3. The Lack of availability of the specialist instructors for some courses.
4. The problem of adding the course of Introduction to Computer periodically for all the university specialties in each semester.
5. Teaching the curriculum of Information Technology books in Palestinian Schools that cover the university curriculum of Introduction to Computer course at PPU.
6. Students face difficulties in focusing their complete attention to get the required knowledge from the traditional learning course.
7. Traditional performing and attendance of student's course exams.
8. Using traditional tools for learning which becomes inappropriate at this time of technology development and evolutions.
9. Lack of interactive contact between teachers and students.
10. Teachers suffering from conjunctions in traditional preparing, updating, adding and deleting lectures, exams and learning plans.
11. Students suffering from boring methods of traditional learning, they need more powerful and appealing ways to make more exciting learning process.

1.5 Solutions:

Some solutions to the previous problems can be classified as the following:

1. Using much more attractive methods that may can simplify the learning process and attract the students to pay attention to their lessons including multimedia tools such as: images, Flashes, Demos , animations, videos ..etc.
2. Designing CD's with the use of multimedia tools that will support and simplify the learning process.
3. Developing the course of Introduction to Computer in order to solve the problem of the curriculums repetition between the schools and the university curriculums.
4. Designing electronic web sites for universities courses to implement the e-learning course term that will help the students in their learning process by supporting them with many options that they can access through the web sites.

1.6 Learning Alternatives:

There are many alternatives to achieve the objectives of learning process; the team will explain three alternatives of the learning process as the following:

1) Traditional Learning:

In general, the traditional approach to learning is mainly focused on the content, with less emphasis on the development of skills and the nurturing of inquiring attitudes. The current system of education is teacher centered, with the teacher focused on giving out information about "what is known." Students are the receivers of information, and the teacher is the dispenser. Much of the assessment of the learner is focused on the importance of "one right answer." Traditional education is more concerned with preparation for the next grade level and in-school success than with helping a student learn to learn throughout life.

Traditional classrooms tend to be closed systems where information is filtered through layers to students. In general, the use of resources is limited to what is available in the classroom or within the school. Use of technology is focused on learning about the technology rather than its application to enhanced learning. Lesson plans are used to organize the various steps in the learning process for the whole-class approach. [8]

- Advantages:

1. Outgoing verbal high-achieving students participate the most.
2. All the students have the ability to being educated at limited lecture time at all universities.
3. The students have more obligation and responsibilities about their course.

- Disadvantages:

1. The consideration of political situation that limits the students to arrive universities at specific time.
2. Traditional learning techniques need more effort and time especially in traveling between the required learning sites.
3. Students face difficulties in focusing their complete attention to get the required knowledge from the traditional learning course.
4. Lake of interactive contact between teachers and students.
5. Instructors "deliver" knowledge.
6. More "passive" learning.
7. Technology may be used, but is not central to the role of being a learner.
8. Various media may be used, but most delivery is by the spoken word, with some written support.

2) Compact disc (CD):

As the internet technology is not available all the time to every one, it is better to use this method, such that the educational material is being copied on compact disc, and is available for students that do not have an internet connection service access.

- Advantages:

- Fast Access.
- Durability, as the students may refer to them any time later.

- Disadvantages:

- An update over CD-ROM learning does not have the same impact of a live workshop.
- Unrespected Copyrights.
- Far easier, CD-ROMs have not been distributed and maintained at endless numbers of locations.

3) E-learning:

E-learning is an approach to facilitate and enhance learning through both computer and communications technology. Such devices can include personal computers, CDROMs, Television, P.D.A.s, MP3 Players, and Mobile Phones. Communications technology enables the use of the Internet, email, discussion forums, WIKIs, collaborative software, classroom management software and team learning systems.

E-learning may also be used to suit distance learning through the use of WANs (Wide Area Networks), and may also be considered to be a form of flexible learning where just-in-time learning is possible. Courses can be tailored to specific needs and asynchronous learning is possible. Where learning occurs exclusively online, this is called online education. When learning is distributed to mobile devices such as cell phones or PDAs, it is called M-learning. [9]

- Advantages

- Learner-focused.
- More "active" learning.
- Instructors "guide" the learners.
- Instructors "model" good learning techniques.
- A much greater percent of students actively participate in discussions.
- Technology helps students explore resources and construct their own meanings.
- Technology may help instructors use multiple forms of media, and reach a wider variety of learning styles.
- Content is easily updated.

- Disadvantages:

- Internet accessibility any time is not available specially the one depending on telephone lines.
- Telecommunications bandwidth and network capacity are insufficient.
- Lack of trust in e-learning system.

1.7 Application Scope:

The application scope is limited to PPU as the first experience to create a unified electronic course to all of Palestine universities based on RUFO project idea.

The following chart shows the structure of to the PPU organizational chart of the colleges to which the course will be applied.

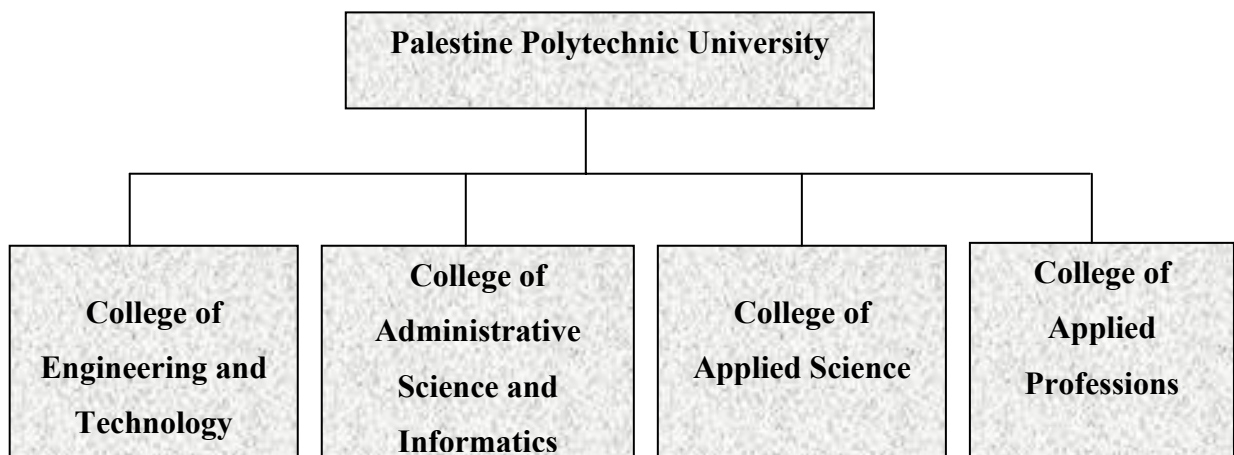


Figure 1.1 PPU Organizational Chart.

1.8 System Importance:

E-Learning moves the learning experience from the traditional classroom into the learner's world, providing access to learning anytime and anywhere without geographical or time barriers, and the internet provides access to learning materials and interaction with experts and fellow learners. This leads to the recognition that e-Learning is a useful tool to help develop learning processes, but that the pedagogical design of the whole learning process.

1.8.1 System importance to students:

The learning process does not stop upon graduation from school. Some people are required to learn new skills for their jobs; some must take courses to remain certified in a given profession; and some may want to continue their education for personal or career advancement. People's schedules have become busier and do not always allow for the quality time needed to attend classes.

E-learning provides the flexibility for students to learn where and when they choose. It offers features to motivate students and provides an evaluation of their performance. Most importantly, it provides a quick, inexpensive, and fun method for students to study, understand, and remember the lessons for future implementation

Many people learn more efficiently by actually doing an activity rather than listening to a speaker explain the process or reading an explanation of the activity in a book. The physical action of hands-on participation helps students to better retain and understand a process. E-learning programs offer various ways to encourage hands-on participation. Interactive exercises, simulations, and games give the students the opportunity to try a process or practice the skills they are learning. Hot links can also be incorporated in the training program and can lead to pop-up windows with additional information about the subject or to other relevant Web sites.[10]

1.8.2 System importance to Teacher:

Those who are thinking about the role of teachers and trainers, consider the role will change following the implementation of e-Learning: “We have to get away from the idea that the teacher is the source of all knowledge. It is important, if we are working with learners at work that many different sources of information and knowledge are acknowledged. The role of the teacher or trainer is to check and advice on the validity of the knowledge.

The teacher role will change from prompter of information to guide and facilitate leaning process, but he is still very important in teaching process for direction, guidance, purgation to effective factors of learning, and supervision.

And this system may view the teacher skills and convey him to make additional effort to get better feed back from users and build communication channel between teacher and student throw discussion space, and emails.

Some of process which the teacher doing in the past was cancels like correct exams and view marks so he can keep his time in useful work. [10]

Feasibility Study

- *Introduction.*
- *Risks and Solutions.*
- *System Resources.*
- *Feasibility Study.*
- *Scheduling.*

2.1 Introduction:

Feasibility study considered to be one of the most important planning stages for the project, as any project must have feasibility study to study the resources such as: the hardware, software, human and cost estimation resources also the benefits and risk evaluation that can be arising during the project team development process.

2.2 Risks and Solutions:

This section talks about the system risks that project team suffering from through the development process. The team then tries to put some solutions to these risks as the following lists.

2.2.1 Risks Analysis:

- The time is limited by the end of course, which is only 15 weeks, and there is no possibility to expand the period, we use this period for developing the content of the curricula of information technology books and convert it to e-learning course.
- We should be limited with the cost that we have decided in the feasibility study.
- The system should be flexible for maintenance and evolution.
- The reliability and stability of the Network connectivity.
- Requirement confliction or new requirements may arise.
- Security and hackers risk.
- Lack of trust in e-learning system.
- The risk of uploading high and heavy files to the web pages which may causes the system stress and failure.

2.2.2 Risks Solutions:

- Commitment to time schedule.
- Use the H.W and S.W that have been specified in the feasibility study.
- Study the system requirement accurately to discover the problem early.

- Following the detailed plan and the documentation outline of the module system steps.
- Planning a more accurate feasibility studies.
- It is the responsibility of the university administration to supply the graduated students with high- level specialized computer devices.
- Using CD's as a supporting alternative for loading files and applications, so as the students may refer to them any time later.

2.3 System Resources:

System resources can be classified into Hardware, Software, and Human Resources. The project team aims at specifying each alternative resource before specifying the 3rd alternative resources:

1) Traditional Learning Resources:

The hardware resources consist of all devices that can be used during learning process such as: Computer devices, Data Show, and Projectors; while the software resources include all the programs that can run these devices; as for the human resources they consist of the course teachers.

2) Compact Disks (CD'S) Resources:

On one hand the hardware resources consist of all devices that can be used to run CDs such as: computer, CD-R/W Drive, and CDs; while the software resources include all the programs that can run these CDs such as AutoPlay program. On the other hand, the human resources consist of the owners and users of CDs.

3) E-learning Resources:

➤ Development System Resources:

1. **Hardware Resources:** The following table lists the Hardware resources required to develop the e-learning alternative:

Item	Number of units
Desktop computers Pentium VI, 2 GHz,512 MB RAM,40GB HD, Monitor15 ,Keyboard and mouse	4
Desktop computers(Special) P4, 3 GHz, 1 GB RAM, 30 GB HD	2
Speakers	2
Color Printer (<u>HP DeskJet 6840 Printer series</u>) with scanner	1
Network Adapter	1
DSL Modem	3

TABLE 2.1 Development Hardware Cost.

2. Software Resources: The following programs list includes the software resources required to develop the e-learning alternative:

- Microsoft windows XP Professional.
- Microsoft Office 2003 Professional Edition.
- Microsoft Visio upgrade version.
- Photo Impact Pro 10.0.
- Photo Shop V.8.
- Macromedia Flash Mx 8.
- Sound forge 7.0.
- Visual Studio 2005.
- MySQL.
- VRML.
- Adobe Acrobat Reader.
- Internet Explorer.
- AutoPlay6 Program.
- Reload Editor.

3. Human Resources: The following lists the required human resource to exchanging their roles in order to develops the e-learning system:

- IT Students.
- Supervisor.
- Trainer (Flash Mx).

4. Book Resources

The following table lists the costs for the Books needed to develop and this project:

Book Name	Type	Number of Units
Information Technology book	Hard copy	2
Introduction to computer	Hard copy	4
Information technology schools book (5 th _11 th) grades.	Hard and soft copy	7

TABLE 2.2 Development Book Resources

5. Other Resources:

There are other resources covering other areas such as:

1. Transportations.
2. Papers.
3. Pens.
4. Toner.
5. CDs and Disks.
6. Flash Memory.
7. External Hard Disk.

➤ Operational System Resources:

1. Hardware Resources: The following table lists the Hardware resources that are required to operate the e-learning system.

Item	Number of units
Desktop computers Pentium VI,3 GHz,512 MB RAM,40GB HD, Monitor17,Keyboard and mouse.	1
Speakers.	2
Color Printer (<u>HP DeskJet 6840 Printer series</u>) with scanner.	1
Network Adapter.	1
DSL Modem.	1

TABLE 2.3 Operational Hardware Resources.

2. Software Resources: The following programs list includes the software resources required to operate the e-learning system:

- Microsoft windows XP Professional.
- Microsoft Office 2003 Professional Edition.
- Macromedia Flash Mx 8.
- Adobe Acrobat Reader.
- Internet Explorer.
- Windows Media Player.
- Visual Studio 2005.

3. Human Resources: The human resources include the following persons in order to operate the e-learning system:

- Course’s teachers.
- Course’s students.

4. Other Resources: Other resources that needed to operate the system programs and contents are only the CD's.

2.4 Feasibility Study:

The project team adapts the 3rd alternative which is "E-learning" with the use of the 2nd alternative of CD's as a supported one to be more dependable alternative to implement the system. The following will describes in details the system technical, legal, and economic feasibility for all of the system resources.

2.4.1 Technical feasibility:

This project requires good programming capabilities, methods and experience in designing web pages, using multimedia programs and in dealing with the Moodle software environment.

All these capabilities are available in the work team in addition to the experience in many programming language such as C, Visual Basin 6.0, Java, and VB.Net ... etc, and in database application such as access and oracle.

2.4.2 Legal feasibility:

While considering our situation, there is no limitations or polices in building such project, so we don't need to take a license to implement this project, and there is no illegal issue. However, in case of implementing this project in the real environment, governmental regulations, and other policies should be considered.

2.4.3 Economic feasibility:

➤ Development System Costs:

1. Hardware Costs:

The following table lists the costs for the hardware resources required to develop this project:

Item	Unit cost	Total Costs
Desktop computers As the previous specification	2000\$	8000\$
Desktop computers(Special) P4, 3 GHz, 1 GB RAM, 30 GB HD	2700\$	5400\$
Color Printer	150\$	150\$
Scanner	50\$	50\$
DSL Modem	210\$	210\$
Network Adapter	48\$	48\$
Total		\$13858

TABLE 2.4 Development Hardware Cost.

2. Software Cost:

The following table lists the costs for the software resources required to develop this project:

Item	Cost
Microsoft windows XP <u>Professional</u>	\$193.40
Microsoft Office 2003 <u>Professional Edition</u>	\$ 436
Microsoft Visio upgrade version	\$ 230
Photo Impact Pro 10.0	\$ 99
Photo Shop V.8	\$ 649
Macromedia Flash Mx 8	\$ 699
MySQL	\$31.49
Visual Studio.NET 2005	\$ 2000
VRML	\$21.73
DSL configuration program (128 KB)	\$ 10
Internet Explorer	\$14.95
Adobe Acrobat Reader	\$24.99
Windows Media Player	\$500.00
AutoPlay6 Program	\$459
Reload Editor	\$22.99
Total	\$5391.55

TABLE 2.5 Development Software Cost.

3. Human Resources Costs:

The following table lists the costs for the human resources needed to develop this project:

Member	Hours/week	Cost / Hour \$	Total/Week
IT Students	30	\$ 12	\$ 2160
Supervisor	6	\$ 60	\$ 360
Trainer(Flash Mx)	4	\$ 10	\$ 40
Total	\$2560		

TABLE 2.6 Development Human Costs.

4. Books:

The following table lists the costs for the Books resources needed to develop and implement this project:

Book Name	Type	Number	Cost \$	Total
Information Technology book	Hard copy	2	\$15	\$30
Introduction to computer	Hard copy	4	\$30	\$120
Information technology schools book (5 th _11 th) grades.	Hard and soft copy	7	\$1.3	\$9.3
Total				\$159.3

TABLE 2.7 Development Book Costs.

5. Other costs:

There is another \$ 500 to cover other areas (transportation, papers, pens... etc).

➤ Operational System Costs:

a. Hardware Costs:

The following table lists the costs for the hardware required to operate this project:

Items	Costs
Desktop computers with the previous mentioned description.	\$ 2000
Internet (DSL Modem, Network adapter)	\$ 258
Total costs	\$ 2258

TABLE 2.8 Operational Hardware Costs.

b. Software Costs:

The following table lists the costs for the software needed to operate this project:

Items	Costs
Microsoft Windows XP Professional (with the previous mentioned descriptions of the required programs: MS Office, Internet Explorer, Acrobat Reader, AutoPlay6 and Visual Studio 2005).	\$ 7023.68

TABLE 2.9 Operational Software Costs.

c. Other costs:

There is another \$ 0.5 to cover the CD's cost to operate the system programs and contents.

➤ **Total System Development Costs:**

Resources	Costs
Hardware Resources Development Costs	\$13858
Software Resources Development Costs	\$5391.55
Human Resources Development Costs	\$ 2560
Books Development Costs	\$159.3
Other Resources Costs	\$ 500
Total Costs	\$ 22468.85

TABLE 2.10 Total Development Costs.

➤ **Total System Operational Costs:**

Resources	Costs
Hardware Resource Operational Costs	\$ 2258
Software Resources Operational Costs	\$ 7023.68
Other Resources Costs	\$ 0.5
Total Costs	\$ 9282.18

TABLE 2.11 Total Operational Costs.

2.4.4 CD's Resources and Economic Feasibility:

In this project the CD's resources and economic costs are the same as the previous e-learning alternative except the Reload Editor program and that are not required through this alternative.

2.5 Scheduling:

2.4.5 Time Schedule:

Nowadays any project either in business, education, or any other field should be limited to a specific time schedule to be adapted. As this project is limited to sixteenth weeks. Obviously it is a short time and this is one of risks that the project team suffering from but they have managed this time to the activities as follows:

<u>Activities</u>	<u>Description</u>	<u>Weeks</u>
Activity 1:	Gathering Data.	13
Activity 2:	System Analysis.	3
Activity 3:	System Requirements.	3
Activity 4:	System Design.	3
Activity 5:	System Implementation.	6
Activity 6:	System Testing.	3
Activity 7:	Documentation.	15

According to the time schedule described above, one may notice that gathering data activity take much time to be completed which is divided into both project data and material data that consumed the time described above.

The following are the proposed and the actual time schedules needed to accomplish the project based on the "Gant Chart" which is considered as the strongest tool for planning and managing the time needed to order the required tasks.

Background

- *Introduction.*
- *RUFO.*
- *E-learning.*
- *SCORM.*
- *MOODLE.*
- *Multimedia.*

3.1 Introduction:

In this chapter the team will provide a background and information about some important terms and applications that are used and taken in account in order to achieve the desired objectives of this project.

3.2 RUFO:

RUFO project was initiated by CNAM University in France, following the European TEMPUS-FINSI project in 4 countries of the Middle East (Lebanon, Syria, Jordan and Palestine).

Starting from October 1983, the CNAM institution has grouped around it European Partner universities that had an experience and an expertise in Open Distance Learning (ODL).

In order to materialize the project, a questionnaire had been submitted to Palestinian universities to get acquainted with their experience in ODL, their needs, their problems and their difficulties. Two study visits were organized (with grants for individual mobility in the TEMPUS program): a Palestinian delegation was hosted in Europe in October 2004, and a European delegation was hosted in Palestine in February 2005.

The TEMPUS-MEDA project then was jointly defined on the basis of an analysis of the context, the finalities, as well as the objectives and the methodology were drafted and submitted to the European Commission.

The European Commission validated the project in June 2005. It was officially launched end of 2005. [11].

3.2.1 RUFO Objectives and Motivations:

The purpose of the project is to:

- Develop individual and collective competences through the implementation of 5 pioneering projects.
- Consolidate the methodological tools that are specifically needed for ODL projects.
- Produce recommendations for academic training in Palestine.
- Create an interuniversity network.
- Supervision and control of the project's progress.

RUFO's purpose is to create an interuniversity network in Palestine for the development of individual and collective competences in the field of open and distance learning, in connection with European networks.

3.2.2 Palestinian Steering Committee:

- An-Najah National University
- Palestine Polytechnic University
- Birzeit University
- Al-Quds University
- Al-Quds Open University

From the Overview you may notice that PPU is one of the universities that have a membership in this project, so the project team adopts and starts working on the PPU's idea of implementing ODL project on the Introduction to Computer Course which is one of the university Requirements to take the Bachelor's degree.

3.3 E-Learning:

3.3.1 What is E-Learning?

E-learning can be defined as the use of processes and technologies to create, distribute, manage, and enable learning via an electronic network.

E-Learning as a definable methodology has only recently come into its own. Loading slides into a web browser might transfer information, but it does not assure a quality learning experience. E-Learning is more than using technology for "just in time" training.

E-Learning, defined as the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration.

E-Learning has to keep in what it's designed for in mind. How do we learn? How do we acquire and retain skills and information to help us develop? Only when we address individual learning styles can the "e" in e-learning factor. Then the technical side—the electronic delivery—can be adapted to the learner.

Another definition of e-learning that we found as " anytime ,anywhere learning with physical separation of the instructor and learner , institutions / instructors control educational delivery while the student is responsible for learning that is one of its characteristic . A third one is the use of communications media to deliver instruction and to permit interaction between the learner and the instructor, as well as among learners themselves. These parts are systematically related to create an environment for E-Learning. [3]

E-learning increasingly uses a combination of different communications technologies that enhance the abilities of teachers and students to communicate with each other. With the spread of computer-network communications in the 1980s and 1990s, large numbers of people gained access to computers linked to telephone lines, allowing teachers and students to communicate in conferences via computers. E-learning also makes computers conferencing on the World Wide Web, where teachers and students present text, pictures, audio, and occasionally video.

In future, learners will be able to e-learn not only in colleges and universities, but at home, at work, in a local library or shopping centre and from any location in the world.

This will be possible using information and communication technologies (ICT) such as the Internet and digital interactive television.[12]

3.3.2 E-Learning Rules and Guidelines:

The team has searched for any set forward rules for implementing E-Learning systems, but unfortunately, has not found much. So, the team has adopted two basic rules for using the technology of e-learning:

1. Technology should not be used to replace teachers or teaching. It should be used as a supplement to teaching, or as a replacement for the absence of teaching, i.e. by making material available if a course is not currently being run, or to remote/life-long learners who do not enjoy the privileges of being linked to an Education institution.
2. Technology should only be used in appropriate stages and a noticeable gain to the teaching quality is evident. It is not essential to use every bit of new technology at your disposal. Sometimes the most noticeable effects can be derived from very easy-to-use methods.

After this brief introduction to the e-learning term, one may notice that there are many benefits and advantages that can be taken. That is why the team is so determined to carry on with the project, doing the best in order to achieve the expected advantages.

3.4 SCORM:

Shareable Content Object Reference Model (SCORM) is an XML-based framework used to define and access information about learning objects so they can be easily shared among different learning management systems (LMSs). SCORM was developed in response to a United States Department of Defense (DoD) initiative to promote standardization in e-learning.

The DoD had been frustrated by problems they encountered when trying to share distance learning courses among different learning management systems used within the Department, so in 1997 they formed the Advanced Distributed Learning (ADL) specification group to create a way to make learning content portable across

various systems. ADL created the first version of SCORM, which originally stood for Shareable

Courseware Object Reference Model. It was designed to facilitate moving course content and related information (such as student records) from one platform to another, to make course content into modular objects that can be reused in other courses, and to enable any LMS to search others for usable course content.

The SCORM specifications, which are distributed through the Advanced Distributed Learning (ADL) Initiative Network, define an XML-based means of representing course structures, an application programming interface (API), a content-to-LMS data model, a content launch specification, and a specification for metadata records for all components of a system.

Also the Sharable Content Object Reference Model (SCORM) is a collection of standards and specifications for organizing and delivering Web-based e-learning contents developing a set of SCORM conformant contents, basically, is similar to developing a kind of Web applications. Up to date, there is no standardized notational scheme for modeling the SCORM-conformant contents due to its infancy. The lack of common notation scheme for notating the artifacts will result in communication and reproducibility issues. [13]

3.4.1 SCORM Utilities:

The SCORM specifies a framework for content and its utilities will be mentioned as the following:

- Reusability:
 - Independent of learning context.
 - Used in numerous training situations or for many different learners.
- Durability:
 - No modifications required operating as software systems and platforms are changed or upgraded.
- Interoperability:
 - Functions in multiple applications, environments, and hardware and software configurations.

- Accessibility:
 - Identifiable and locatable when and as needed.
- Affordability:
 - Increases learning effectiveness significantly while reducing time and costs.

3.5 MOODLE:

Moodle is a software package for producing internet-based courses and web sites. It's an ongoing development project designed to support a social constructionist framework of education.

Moodle is provided freely as Open Source software (under the GNU Public License). Basically this means Moodle is copyrighted, but that you have additional freedoms. You are allowed to copy, use and modify Moodle provided that you agree to: provide the source to others; not modify or remove the original license and copyrights, and apply this same license to any derivative work.

Moodle will run on any computer that can run PHP, and can support many types of database (particularly MySQL).

The word Moodle was originally an acronym for Modular Object-Oriented Dynamic Learning Environment, which is mostly useful to programmers and education theorists. It's also a verb that describes the process of lazily meandering through something, doing things as it occurs to you to do them, an enjoyable tinkering that often leads to insight and creativity. As such it applies both to the way Moodle was developed, and to the way a student or teacher might approach studying or teaching an online course. Anyone who uses Moodle is a Moodler. [14]

3.5.1 Case for Moodle:

➤ *High availability:*

Usage patterns will vary strongly with the specific context of the deployment. But in general, Moodle presents a high-availability web-based interface, allowing learners, tutors, and administrators routinely to log in and carry out their daily takes.

➤ *Scalability:*

Moodle runs on a wide variety of web servers/database technologies. As with any installation of a server-based software system, it is crucial to refine carefully the choice of hardware, operating system, and database system, to ensure that the system can cope with a high throughput. The largest live Moodle installation at time of writing (Open Polytechnic of New Zealand) handles 45,000+ students and 6,500+ courses registered.

The consensus in the Moodle community seems to be that a Linux-based web server running Apache, with PHP installed as well as a PHP accelerator is commonly the best choice, and that the web server and database server should sit on separate machines.

It should be possible to load-balance a Moodle installation, for example by using more than one web server if necessary. The separate web servers should query the same database and refer to the same file store area, but otherwise the separation of the application layers is complete enough to make this kind of clustering feasible. Similarly, the database could be a cluster of servers (e.g. a MySQL cluster).

All this implies that Moodle's architecture makes it easy to respond to future demand, by adapting the technologies upon which it runs. This should be possible even in a live setting, to improve the service without major disruption.

➤ *Usability:*

Perhaps the best sentence to short Moodle usability is: "simple and powerful". There is some talk about Moodle usability.

The Interface guidelines aim to help developers work towards a highly usable system. And the general consensus is that Moodle excels in this area.

➤ *Interoperability:*

- For authentication, Moodle supports authenticating against LDAP, which is the most widely-used standard protocol for this purpose. It also supports authentication based on direct database lookup (e.g. in an external Oracle

database), or on the Shibboleth protocol, or alternatively using IMAP, NNTP, CAS or FirstClass.

- For enrolment, Moodle supports the use of an LDAP server (e.g. Active Directory), and the IMS Enterprise standard (via a downloadable plug-in).
- For content, there are a number of aspects:
 - Moodle supports the import/export of Reusable Learning Objects packaged according to the SCORM / IMS Content Packaging standards.
 - Quiz questions can be exported in the international standard IMS QTI 2 format.
 - RSS news feeds can be integrated into a Moodle site or course.
 - Forum discussions can be accessed as RSS news feeds, and therefore integrated into other RSS-capable websites or systems.

The use of XML for import/export is standard in Moodle. The "web services" method of exchanging data with other systems (e.g. via SOAP or XML-RPC) is not yet standard - but is in active development.

➤ *Stability:*

The LMS infrastructure can reliably and effectively manage a large enterprise implementation running 24x7. This is the same issue as discussed in Availability and Scalability above.

➤ *Security:*

Moodle's current system of roles includes administrators, teachers, and teachers without editing privileges (sometimes called teaching assistants), students, and guests. Each has a clearly defined set of privileges and cannot act beyond those privileges.

The basic unit of organization is the course. An administrator can assign any number of teachers (with or without rights to edit content) to a given course, which has its own file area as well as its own discussions forums and other activities. Teachers can decide whether content is visible or hidden to students. [14]

The project team has searched and collected information about how to use the Moodle software in this project? How the team can take the maximum advantages? And how to apply this software to the content of Introduction to Computer Course?

This process has achieved through some supported lectures and classes that take their place at the center of Information Technology which were about how to use and apply the Moodle software that helped the team to complete their work on this project.

3.6 Multimedia:

Multimedia is the field concerned with the computer-controlled integration of text, graphics, drawings, still and moving images (Video), animation, audio, and any other media where every type of information can be represented, stored, transmitted and processed digitally.

A Multimedia is an application which uses a collection of multiple media sources e.g. text, graphics, images, sound/audio, animation and/or video.

Hypermedia can be considered as one of the multimedia applications. [9]

3.6.1 Characteristics of a Multimedia System:

A Multimedia system has four basic characteristics:

- Multimedia systems must be computer controlled.
- Multimedia systems are integrated.
- The information they handle must be represented digitally.
- The interface to the final presentation of media is usually interactive.

3.6.2 Some Limitations of Multimedia:

- It needs a large Storage Area.
- It needs Powerful CPU.

3.6.3 What is Hypertext and Hypermedia?

Hypertext is a text which contains links to other texts. Hypertext is therefore usually non-linear (as indicated below).

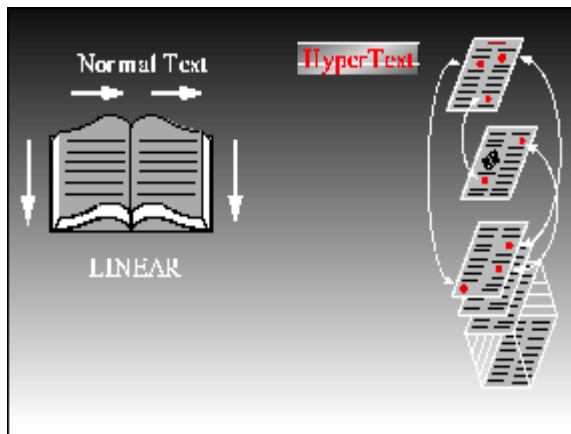


Figure 3.1 Hypertext

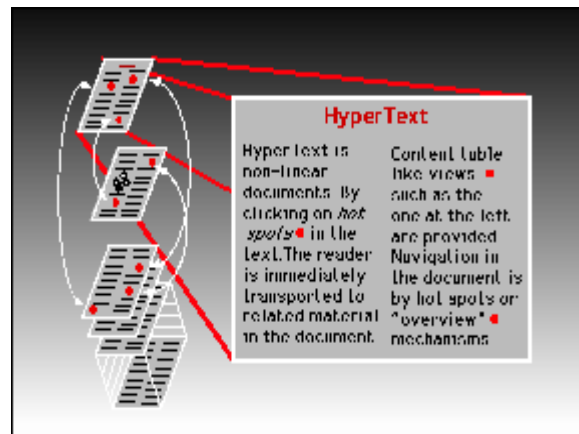


Figure 3.2 Hypertext

Hypermedia is not constrained to be text-based. It can include other media, e.g., graphics, images, and especially the continuous media - sound and video.

The World Wide Web (WWW) is the best example of hypermedia applications.[9]

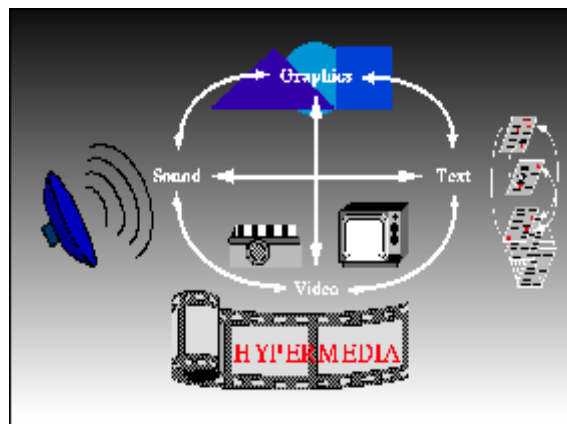


Figure 3.3 Hypermedia

System Analysis

- *Introduction.*
- *Traditional System Analysis.*
- *Questioner Analysis.*
- *E-learning System Analysis.*

4.1 Introduction:

System analysis is one of the most important stages in any project. In this chapter the team will describe in details the process of analyzing the existing traditional learning system which is represented by analyzing the results of the questioner that the team prepared and distributed to the PPU students. The second step is to analyze the e-learning system that the team wanted to build and develop. The last step of analyzing is represented by distinguish between the two system (Traditional and E-learning System). The following explains this process in details.

4.2 Traditional System Analysis:

Depending on the results of analyzing the old system, our project team would like to illustrate some facts about the traditional ways of learning at PPU:

One of the facts about the traditional learning is that most of the time spent as a learner has probably been in a "traditional" classroom. Traditional classroom learning is often focused on the instructor. Information tends to flow from instructor to students, and as a result can be more passive for students. This is often characterized by the phrase "sage on the stage" because the instructor (considered to be the expert) must somehow transfer his or her knowledge to the learners (assumed to be less-knowledgeable).

It should be noted that many instructors in the traditional classrooms utilize a very learner-focused framework, like the online classrooms. While this is a potential, it is also rare. Since most instructors were taught in instructor-focused classrooms it is very hard for them to break from this mold. However, in the online environment, an instructor that tries to continue the instructor-centered model will likely fail to maintain it.

The object of teaching is to provide knowledge of a given subject. Upon comprehension of that knowledge through studying, the students should be able to apply the learned skills in their daily life. The key to learning is retention—remembering and

understanding the material in order to implement it. Learning is frequently interchanged with memorization, but they are not the same thing.

People often memorize content for a quiz, but once they take the quiz, they forget the Material. So, they have not really learned and comprehended the material, but have only temporarily committed it to memory so they can recite the material for the quiz. Retention of material, not merely memorization, must be a goal when planning lessons for effective learning. With self-paced learning on the Web site or on a CD, the philosophy remains the same. Students must be able to understand the material, remember it, and accurately apply the skills they have learned in their job or daily life.[10]

The process of analyzing the old system does not only depend upon the methods of learning. On the other hand, we must take into consideration that the content of the existing Introduction to Computer book must be comprehensive and covers all the important topics of computer and IT environment.

4.2.1 Analyses Specification:

It is well known that the university stage comes after the school stage for establishing the information and taking the specialization of the student in the major that he/she wants to continue in. Introduction to Computer is one of the main prerequisite courses in any university. Since schools start teaching information technology, there is a necessity to combine between what the students have taken in school and what they need to take in the university, in a way that achieves additional skills and information about the computer world. So, the project team studies the schools Information Technology pupil's books taught from the fifth grade to the eleventh grade and begin to analyze the contents unit by unit and comparing it with the contents of the present Information Technology book taught in Palestine Polytechnic University.

The technique of analyzing was as follows:

- 1- Combining all of the books that are related to the Information Technology.
- 2- Dividing the contents related to the hardware from the once related to the software.
- 3- Studying and analyzing the contents unit by unit.
- 4- Considering the books depending on old teaching methods at the university for analysis.
- 5- Comparing the contents of the school books and the contents of the present university books.
- 6- Updating the contents of the university book to become compactable with what is given in the school books.

➤ The Result are as Follows:

The team has noticed that some of the schools information technology curriculums are too difficult to be studied at early stages especially that some subjects are at a high level for the students to learn. On the other hand, the students are suffering from studying and interacting with such curriculum especially in the 11th grade information technology book as some subjects of the book are not integrated.

The team has started the work of the specific analysis and study by gathering the school's Information Technology books from 5th-11th grade, the study concerns dividing the curriculum in two parts of hardware and software to simplify the analysis and study of the IT books.

The following are the basic parts of the hardware and software contents of the schools IT books from 5th-11th grades respectively:

The contents of the 5th grade book are:

Hardware contents:

This book contains the declaration of computer, characteristics, and components of input and output units in an easy and summarized way to be studied and learned.

Software contents:

The contents of this book are specified at starting and shutting down the windows operating systems, learning what is operating system in addition to a simple introduction about the Paint Program.

The contents of the 6th grade book are:

Hardware contents:

This book contains some subjects related to the previous studied 5th grade subjects such as input and output units but in more details. The content also contains the storage devices, in addition to file types and the way of storing and naming such files at the computer.

Software contents:

The content of this book contains detailed information about the operating system and windows environment, the way to make folders, and dealing with: copy, cut, paste, delete, and update operations. Other subjects explain the way to deal with searching engines and how that work, while other subjects focus on Paint Program in more details rather than such previous topics at information technology books.

The contents of the 7th grade book are:

Hardware contents:

The contents of this book includes the steps of purchasing a computer, components of computer including input and output units in more details than the previously studied , and system units such as: memory, processor and, secondary storage units.

Software contents:

The book also contains an introduction about Microsoft Office Word.

The contents of 8th grade book are:

Software contents:

This book contains a review of Microsoft Office Word, its applications, and how to deal with it in more details. Other chapters talk about Microsoft Office Excel and its Fundamentals and applications.

The contents of 9th grade book are:

Hardware contents:

The book contents talk about the history of communications and transmitting information ways, while other chapters talk about Networks and communications which include physical components and types of Networks, network topology, network core devices, and types of Wire Network in a summarized way. The book also explains the way to establish a network between computers, in addition to how to deal with internet and a simple explanation about e-commerce and e-mail.

Software contents:

The book explains the way to deal with Microsoft Office PowerPoint, its components and applications, and how to make a simple web page using Microsoft FrontPage.

The contents of 10th grade book are:

Software contents:

The book contains fundamentals about programming and flowcharts. It also talks about Visual Basic programming and its components and how to make a program. Other chapters talk about programming bundle, AutoCAD program, circuit maker and Photoshop programs.

The contents of 11th grade are:

This book explains and clarifies the definition of Information Technology term, besides the scope of using information, information security, ethics, laws of keeping information, and software copy right.

Hardware contents:

The book deals with numeric system and operations to it, in addition to the way of forming data in computer. Some chapters talk about computer components and diagrams, instruction set, memory type and access, input and output units, computer carriers. The book also includes chapters about computer maintenance and how to integrate the computer components.

Software contents:

The software contents in this book are about Visual Basic program, procedures, functions, variable scope, arrays, and records in more details than the books of previous grades in such subjects. Other chapters talks about data structures, arrays (one and two dimensions) , records, applications on arrays and search types, sorting types, stacks, queues and algorithms in detailed information, in addition to operating system and its tasks ,viruses and downloading Windows XP.

4.2.2 The Conclusions:

After the system analyzing stage, the team analysis conclusions are as follows:

- The 5th grade IT book requires more extended explanations about the computer history generations.
- The chapter of computer maintenance in 11th grade is comprehensive and covers the content of 5th grade IT book excluding the computer generation topics.
- The 8th grade IT book is considered to be a comprehensive one as it includes enough explanation of MS Excel and integrated one to MS Word which is included in 7th grade IT book.
- Microsoft Office PowerPoint contents which included in 11th grade are considered to be enough for the students to be able for preparing presentations from the beginning of their study at universities.
- Information Technology books needs the course of Office Automations to be deleted from the college requirements courses.
- The content of Visual Basic in 10th and 11th grade is considered to be comprehensive so there is no need to be reapted at campus.
- Chapter four of the 11th grade explains in details of the previous chapters about

data structure which includes flowcharts, excluding of programming topics.

- The 11th grade of IT book is considered to be a comprehensive one of all previous IT books stages.

4.3 Questioner Analysis:

The sample of the questioner consists of about 140 students of both genders (male & female), from the first level education. The percentage of male student was about 59% while the female percentage was about 41%, tacking in to consideration that the gender was not the dependable measure.

QNo	Question Text	Percentage				
		Yes	No	Sometimes	Rarely	In some subjects
2	Do you have a computer device at your home?	97%	3%	_____	_____	_____
3	Do you have previous skills at using the computer device?	87%	13%	_____	_____	_____
4	Do you believe that the traditional learning techniques help you in understanding the course?	54%	46%	_____	_____	_____
5	Would you prefer to use other techniques in teaching such courses?	65%	35%	_____	_____	_____
6	Do you interact with the present course?	37%	19%	44%	_____	_____
7	Do you have any problems in understanding some computer terms?	34%	29%	37%	_____	_____
8	Do you have any difficulties with studying this course?	23%	20%	_____	_____	57%
9	Do you notice any integration	68%	32%	_____	_____	_____

	in the book contents?					
10	Can you deal with the computer when you are facing any problem?	24%	36%	40%	_____	_____
11	Are you one of the good users of the internet?	80%	2%	18%	_____	_____
12	Do you have any background of the "e-learning" term?	65%	35%	_____	_____	_____
13	In your opinion, do you believe that the e-learning technique can be a good alternative rather than the traditional learning technique?	25%	40%	35%	_____	_____
14	Do you believe that the book contents are comprehensive and cover the computer numbering system?	46%	54%	_____	_____	_____
15	Do you have any difficulties with understanding the part of numbering system?	55%	45%	_____	_____	_____
16	Are the sections of computer components and input/output devices explained in details?	79%	21%	_____	_____	_____
17	Is the section of the memories types explained in details?	56%	44%	_____	_____	_____
18	Is the Microprocessor Mechanism explained clearly and understandable?	45%	55%	_____	_____	_____
19	Does the book talk about the term of programming language?	32%	68%	_____	_____	_____

20	Do you deal with Visual Basic programming?	17%	73%	_____	_____	_____
21	Does the introduction into computer book include a computer maintenance section?	15%	85%	_____	_____	_____
22	Does this book talk about the computer viruses and risks avoidance?	10%	90%	_____	_____	_____
23	Does the book introduce the section of computer networks in general?	20%	80%	_____	_____	_____
24	Does the book introduce the section of Data structure and algorithms in general?	10%	90%	_____	_____	_____
25	Do you have any suggestions about this course?	_____	_____	_____	_____	_____

TABLE 4.1 Questioner's Analyses.

4.3.1 Questioner Analysis Specification:

According to the survey on question 2:

The team has noticed that most of the students have PCs, which is a positive result that supports the ability to continue working on the project idea.

According to the survey on question 3:

The team has noticed that most of the students have previous skills at using the computer device, which gives us a good indication to continue working on this project.

According to the survey on question 4:

The team has noticed that the question results are convergent, which gives us a positive impression that there are a considerable number of students that agree on using other alternatives for teaching according to the following reasons:

- Unclear explanations for the content.
- Lack of practical learning.
- Suffering from boring routine learning and lack of interaction.
- Suffering from the large number of students at the same class.
- Suffering from teacher's rapidly teaching.

According to the survey on question 5:

The team has noticed 50% of the students accept adopting other teaching methods; most of them prefer to use multimedia tools in the teaching process.

According to the survey on question 6:

The team has noticed that 44% of the students are interacting with this course in some topics while 19% of the students don't interact. However; this is a good percent that encourages the project team to search for other interactive alternatives.

According to the survey on question 7:

The team has noticed that some of the students have difficulties in some terms of the introduction to computer book. So this result has given us a guidance to continue our work in using methods to simplify the learning terms.

According to the survey on question 8:

The team has noticed that there are a lot of students suffering from some topics in this course, so the team has given them a lot of questions to decide which topics they do not understand to help the team in explaining to them in a simple way.

According to the survey on question 9:

The team has noticed that 68% of the student opinions about the integration in the book are positive, and that has helped the team to follow the same way in the order of new content's book that the team will produce.

According to the survey on question 10:

The team has noticed that a lot of students especially females don't know how to deal with the computer problems which is a very important topic that a lot of students don't have any idea about it. As we see, 24% of the females answer that they don't have any idea how to deal with computer problems, 21% say some time, and 3% say yes. On the other hand, the male answers are 35% for some times, 16% do not know how to deal with it, and 31% can deal it easily.

After the project team has discussed these answers they suggested to add a topic related to computer maintenance.

According to the survey on question 11:

The result has been positive for most of the students can deal with the internet, and this is a good indication to apply our project.

According to the survey on questions 12 and 13:

The team has noticed that a good number of students have an idea about the term of e-learning and this is a positive result. However, the opinion of the students for applying this method in the learning was different: 25% among that agree to implement this method, 40% do not agree, and 35% of the students agree to apply this method only on some topics.

So the project team role is to persuade the students that the e-learning can change the negative believes "from their point of views" which can be summarized as follows:

- They don't trust this technology.
- The e-learning is less interactive.

- The traditional way in learning is more appropriate.

From the previous answers the team believes that the students don't have a background about the e-learning which is taking place in the whole world, so they need additional information about it.

According to the survey on questions 14 and 15:

The team has noticed that about 54% of the students agree that the book contents are not comprehensive and doesn't cover the topic of numbering system, and about 55% of the students have difficulties in understanding this topic.

According to the survey on questions 16, 17, and 18:

The team has noticed that the topics of computer components, input/output devices and memory are understandable. While the topic of microprocessor mechanism is not understood by most of the students. This has given us a guidance to continue working at multimedia tools to explain the idea.

According to the survey on questions 19, and 20:

Most of the students agree that the content of the existing Introduction to Computer book doesn't contain the topics of programming language and Visual Basic.

According to the survey on questions 21, 22, 23, and 24:

The team has noticed that the topics of computer maintenance, viruses, computer networks, and data structure are not included in the existing introduction to computer book.

According to the survey on question 25:

The team has noticed that the students suggest the following:

- The course should be more comprehensive at numbering system, microprocessor, programming language, computer maintenance, viruses, computer networks, and data structure.
- Changing the teaching techniques.
- Solving the problems of large student's number at the learning class.
- Using multimedia tools in the teaching process.

4.3.2 Results of Analyzing:

As the results of studying the existing book, the project team has noticed that the book does not cover all the computer topics such as: operating system, computer maintenance, programming language, data structure, viruses, networks, and numbering system which is not a comprehensive topic.

The team has also noticed that the traditional learning ways using the traditional books do not support the student with multimedia options that may clarify and explain the idea in an attractive way.

The project team suggests forcing a level exam for the students to pass Introduction to Computer course at university. The exam examines the students' knowledge and skills at computer fundamentals and applications. As the student passes this exam he/she will exceed introduction to computer course and take a higher dependable courses, others who fail should take this course that the project team wants to modify and develop.

The project team has take a period of time for gathering the information from different resources such as books, papers, internet, CDs, and net magazines.

Depending on the results of analyzing the old system, the project team has decided to start working at this project by collecting information and trying to change the content of the existing book, and going towards developing the e-learning techniques by preparing the required multimedia tools, PowerPoint presentations, documented content, PDF, and web application using FrontPage and PHP. All these prepared contents will help the student in understanding the topics of the Introduction to Computer course.

4.4 E-learning System Analysis:

Online learning is focused more on the student. More information (in the form of questions or comments) often flows from the student to the instructor (or CBT system). As a result of learners constructing their own learning, they are considered to be more active. This type of active learning forces instructors (or CBT designers) to be "guides on the side" of the learner. Online learners have more responsibility for their learning, and instructors spend much more time providing resources than delivering contents.

Traditional classes and online classes often use different technologies, types of media, and forms of interaction. These new types of technology and interaction contribute to focus on the learner. With its wider range of technologies, media and forms of interaction, e-Learning (in a well planned setting) can help instructors meet a broader range of students' needs.

4.4.1 How is it different from traditional courses?

Before beginning the comparison it must be noted that all learning situations differ from each other. There are high quality and low quality traditional settings, and the same can be said of e-Learning. Very often the efforts of the individual teacher and student are the greatest factors. With that said we will over-generalize to state some potential differences of online learning.

When the teams e-Learning in this section mainly online classes we will consider. It should also be noted that e-Learning could be taught entirely by computer (CBT) or be self paced (tutorials) either of which would have even larger differences with the traditional classroom.

Traditional Courses	Online Courses
Instructor-focused	More "passive" learning
More "passive" learning	More "active" learning
Instructors "deliver" knowledge	Instructors "guide" the learners
Outgoing, verbal, high-achieving, students participate the most	Instructors "model" good learning techniques
Technology may be used, but is not central to the role of being a learner	A much greater percent of students actively participate in discussions
Various media may be used, but most delivery is by the spoken word, with some written support	Technology may help instructors use multiple forms of media, and reach a wider variety of learning styles

TABEL 4.2 E-learning versus Traditional Learning.

Requirement Analysis

- *Introduction.*
- *Functional Requirements.*
- *Non-Functional Requirements.*

5.1 Introduction:

The system requirements in this system can be categorized into functional and non-functional requirements.

The project team describes them in details through this chapter.

5.2 Functional Requirements:

This system contains many functions, in this section the main functions and descriptions for each will be covered.

The functional requirements can be classified into types such as: Student Requirements, Material Requirements, Help Requirements, and Moodle Requirements which are classified into instructor, student, and administrator Requirements which will be described as follows.

5.2.1 Requirements Definition:

➤ Student Requirements

- The ability of the registered student to login to the course.
- The ability of registered student to browse course.
- The ability to logout from the course.
- The ability to do exercises (short exams).
- The ability to make interaction with other people through the forums.
- Providing material for learning.
- The ability of downloading different materials such as: PowerPoint, PDF, MS Word, Flash, Demo...etc.

➤ Material Requirements

- Providing word, PDF documents, and PowerPoint presentations.
- Providing animation (Flash, Demo, and VRML) with pictures.
- Providing front page browsing.
- Providing application with Visual Studio. Net 2005.
- Providing sound and video display.

➤ providing help

- The system should provide a way to explain to the user how to use the system.

➤ Moodle Requirements

- *Instructor Requirements:*
 - The ability to login to the course.
 - The ability to logout from the course.
 - Display information about the course registered students.
 - Answering the students' questions and sending feedback by using emails and forums.
 - The ability to add, delete, and update exams, questions, examples, lectures, videos and outline of the course.
 - The ability to edit the roles of student operations (edits lectures display, time, exams, answers, and split students to groups).
 - The system provides a forum between instructor and students.
 - The ability to interact with students and other people through the forums.
 - The ability to add news and announcements.
- *Student Requirements:*
 - The ability of the registered student to login to the course.
 - The ability of each registered student to study the course.
 - The ability to logout from the course.
 - The ability of the system to provide quizzes with automatically feedback on the answers, in addition to review questions for each chapter.
 - The ability of the system to provide a forum between students with instructors.
 - The ability to choose the language of browsing.

- *Administrator Requirements:*
 - The ability to update, insert and delete DB tables remotely.
 - The ability to update and setting the Moodle design.
 - The ability to add and delete any instructor.
 - The ability to add, delete, and update the materials.
 - The ability to grant authorization to instructors, students and guests.
 - The ability to Logout Administrator account.
 - The ability to follow the transaction of any one who browses the system.
 - The ability to determine the level of the system security.

5.2.2 Requirement Specifications

➤ Student Requirements Specifications

- The ability of the registered student to login to the course.

Function: Login

Description: Identify the student using User Name, and password.

Inputs: User Name, password.

Source: Moodle Form.

Outputs: Moodle Page.

Destination: Browser.

Requires: Nothing.

Precondition: Registered student.

Post condition: The user can share the site transaction.

Procedure: This function requests a user name and a password, if these are correct, then the student can share the site transactions; else a message will appear to tell the student that the user name or password is not correct.

- The ability of registered student to browse course.

Function: Browse Course.

Description: The student can browse the site content.

Inputs: Nothing.

Source: Web Form.

Outputs: Display the requested page.

Destination: Browser.

Requires: Login.

Precondition: Logged in student.

Post condition: None.

Procedure: The site can provide the student with a non-linear navigation.

- The ability to logout from the course.

Function: Logout.

Description: This function enables the student to logout from his/her account.

Inputs: None.

Source: Logout screen.

Outputs: None.

Destination: System home page.

Requires: Login.

Precondition: Logging in Student (Account is open).

Post condition: logging out Student (Account is closed).

Procedure: This function enables the student to logout from his/her account.

- The ability to do exercises (short exam).

Function: Do exercises.

Description: This function enables the student to enter to the exercise page and do it.

Inputs: Answers.

Source: Exercise Page.

Outputs: Result.

Destination: Browser.

Requires: Login.

Precondition: Logging in Student.

Post condition: Check answers.

Procedure: The student selects one of four choices then submits the answer, if the answer is incorrect then a message of incorrect answer will appear, else a message of correct answer will appear and set a mark of each answer.

- The ability to make interaction with other people through the forums.

Function: make interaction with other people through the forums.

Description: This function enables the student to interact with other people through using the forum.

Inputs: Nothing.

Source: Moodle Page.

Outputs: Forum Page.

Destination: Browser.

Requires: Login.

Precondition: Logging in student.

Post condition: The student can interact with other people.

Procedure: The student can interact with their teachers and other people through the forum page.

- Providing material for learning.

Function: Provide material and content for learning.

Description: This function will provide the student with different material for the course to be learned.

Inputs: None.

Source: Moodle Page.

Outputs: Materials in different formats.

Destination: Browser.

Requires: Login.

Precondition: Logging in student, and selecting the required topic.

Post condition: Display the selected material.

Procedure: This function will supply the students with different formats of materials and contents for the learning process.

- The ability of downloading different materials.

Function: downloading different materials.

Description: This function will allow the student to download different format of the course's materials such as: PowerPoint, PDF, MS Word, and animation materials.

Inputs: None.

Source: Moodle Page.

Outputs: downloaded Materials.

Destination: Browser.

Requires: Login.

Precondition: Logging in student.

Post condition: Display the downloaded material.

Procedure: This function will allow the student to download different formats of the course's materials such as: PowerPoint, PDF, MS Word, and animation materials.

➤ Material Requirements

- Providing MS Word, PDF documents, and PowerPoint presentations.

Function: Provide word, PDF documents, and PowerPoint presentations.

Description: This function will supply the students with different formats of documents.

Inputs: None.

Source: Moodle Page.

Outputs: Material in different formats.

Destination: Browser.

Requires: Login.

Precondition: Logging in Student, and select the required topic.

Post condition: Display the selected content.

Procedure: This function will supply the students with different formats of document such as: word, PDF documents, and PowerPoint presentations.

- Providing animation (Flash, Demo, and VRML) with pictures.

Function: Provide animation (Flash, Demo, and VRML) with pictures.

Description: This function will supply the students with different formats of animation to clarify the idea of contents.

Inputs: Nothing.

Source: Web Page and Moodle Page.

Outputs: Animation in different formats.

Destination: Browser.

Requires: Login.

Precondition: Logging in Student, and select the required animation.

Post condition: Display the selected animation.

Procedure: This function will supply the students with different formats of animation such as: Flash, Demo, and VRML.

- Providing html page browsing.

Function: Provide html page browsing.

Description: this function will enable the student to display the content as a web page.

Inputs: Nothing.

Source: Front Page.

Outputs: Web page.

Destination: Browser.

Requires: Login.

Precondition: Logging in student, and select the required topic.

Post condition: Display the selected web content.

Procedure: this function will enable the student to display the content as a web page.

- Providing application with Visual Studio. Net 2005.

Function: Provide application with visual studio. Net 2003, 2005.

Description: This function allow student to download programming application that is made by visual studio 2005.

Inputs: User Name, and Password.

Source: Windows Form.

Outputs: Application Form.

Destination: Browser.

Requires: Login.

Precondition: Logging in student, enter the application key word.

Post condition: Exit the application.

Procedure: This function allows the student to download programming application, such as data structure programming windows application that is made by visual studio 2005.

- Provide sound and video display.

Function: Provide sound and video display.

Description: This function supplies the student with sound and video of the required course lectures.

Inputs: Nothing.

Source: Web page and moodle page.

Outputs: Video.

Destination: browser.

Requires: Login.

Precondition: Logging in student, select the video to be displayed.

Post condition: display the selected video with sound.

Procedure: This application will allow the student to display the supporting videos with sounds on some topics.

➤ Provide help

- System should provide a way to demonstrate to the user how to use the system.

Function: provides a help for using the system.

Description: This function provides the students with a help on how to use and trace the system.

Inputs: Nothing.

Source: Moodle Page..

Outputs: Help.

Destination: Browser.

Requires: Login.

Precondition: Logging in student.

Post condition: Display help.

Procedure: This function provides the students with a help on how to use and trace the system by using the non-linear navigation.

5.3 Non-Functional Requirements:

The non-functional requirements are those of the user, and they are not related to the need of software or any thing related to the functionality of the system.

Non-functional requirements can be classified into: Product, Process, External, Moodle, and SCORM requirements which are explained as the following.

5.3.1 Product Requirements

- Ease of use: The system must provide a friendly interfaces and easy to be used across all its functions.
- Coherency and Consistency: The system must support consistence interface with its buttons, colors, actions and appearance.
- Accessibility and availability: The system must be easy to access, login, navigate and use, and to be updated recovered by the Instructor remotely.
- Flexibility and high speed display: The system must allow the users to access the website from different locations as faster as possible.
- High efficiency: The system must provide high efficiency website in a way that no error can be occurred in its transactions.
- Accuracy: The system must provide a high level of accuracy especially in its transactions.
- High robustness: The system must provide high robustness for any failure and should work the longest time before coming down.
- Learnability: the system must allow the student to make online learn process in easy way.

5.3.2 Process Requirements

- The system and its documents must be delivered on 14 June, 2006.

5.3.3 Legislative Requirements

- Security: The system must Limit and control access to online content, resources and back-end functions.

- Safety: The system must apply different safe authentication and backup methods.

5.3.4 Moodle Requirements

- High availability: Usage of patterns will vary strongly with the specific context of the deployment. However, Moodle presents a high-availability web-based interface in general, allowing learners, tutors, and administrators routinely to log in and carry out their daily tasks.
- Scalability: The infrastructure should be able to expand or scale to meet future growth, both in terms of the volume of instruction and the size of the student body.
- Usability: To support a host of automated and personalized services, such as self-paced and role-specific learning, the access, delivery and presentation of material must be easy-to-use and highly intuitive — like surfing on the Web or shopping on Amazon.com.
- Interoperability: To support content from different sources and multiple vendors' hardware/software solutions, the LMS should exchange data using open industry standards for Web deployments.
- Stability: The LMS infrastructure can reliably and effectively manage a large enterprise implementation running 24x7. This is the same issue as discussed above in Availability and Scalability.
- Security: As with any outward-facing collaborative solution, the LMS can selectively limit and control access to online content, resources and back-end functions, both internally and externally, for its diverse user community. [14]

5.3.5 SCORM Requirements

The SCORM specifies a framework for content that meets the following requirements for e-learning content:

- Durability - Content should last long enough to amortize its cost, and be usable as long as it is relevant.
- Portability - It should be possible to move the content easily from one delivery environment to another. The same content should work without modification in

different delivery environments, as long as the delivery environment contains a web browser.

- Reusability - It should be possible to build the content in small, reusable modules that can be reused in different ways. Different communities of practice should be able to share reusable content.
- Interoperability - The same content should work the same way as it is deployed in different environments, regardless of the vendor or developer of the delivery environment.
- Accessibility - It must be possible to find the content in a repository. This requires that some standard cataloguing data be associated with the content.[15]

System Design

- *Introduction.*
- *System Context.*
- *Functional Design.*
- *Navigation Map.*
- *Story Boards.*
- *Data Dictionary.*
- *Database Dictionary.*
- *Test Plan.*

6.1 Introduction:

This chapter will describe the design and the structure of the system to be implemented. This will include the interaction between the system and its surrounding input output environment. The chapter also will describe the navigation map and the story board for each designed interface.

6.2 System Context:

Figure 6.1 shows an overview of the system and its relationships with other systems. This diagram shows only the systems names without details about the relationships.

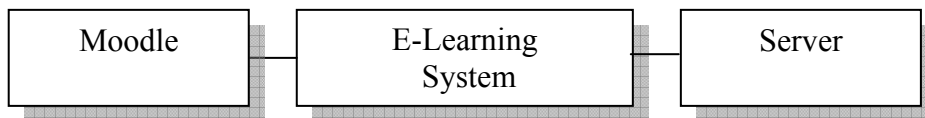


Figure 6.1 System Context Diagram.

6.3 Functional Design:

The main functional design of the system is to support the user with the ability of making browsing. The system also allows the students to download materials, doing quizzes, and interacting with their instructors and other people.

In addition the system support the teacher with the ability of adding , deleting and setting the course's materials and other functions that are described previously in chapter five.

Login Flowchart

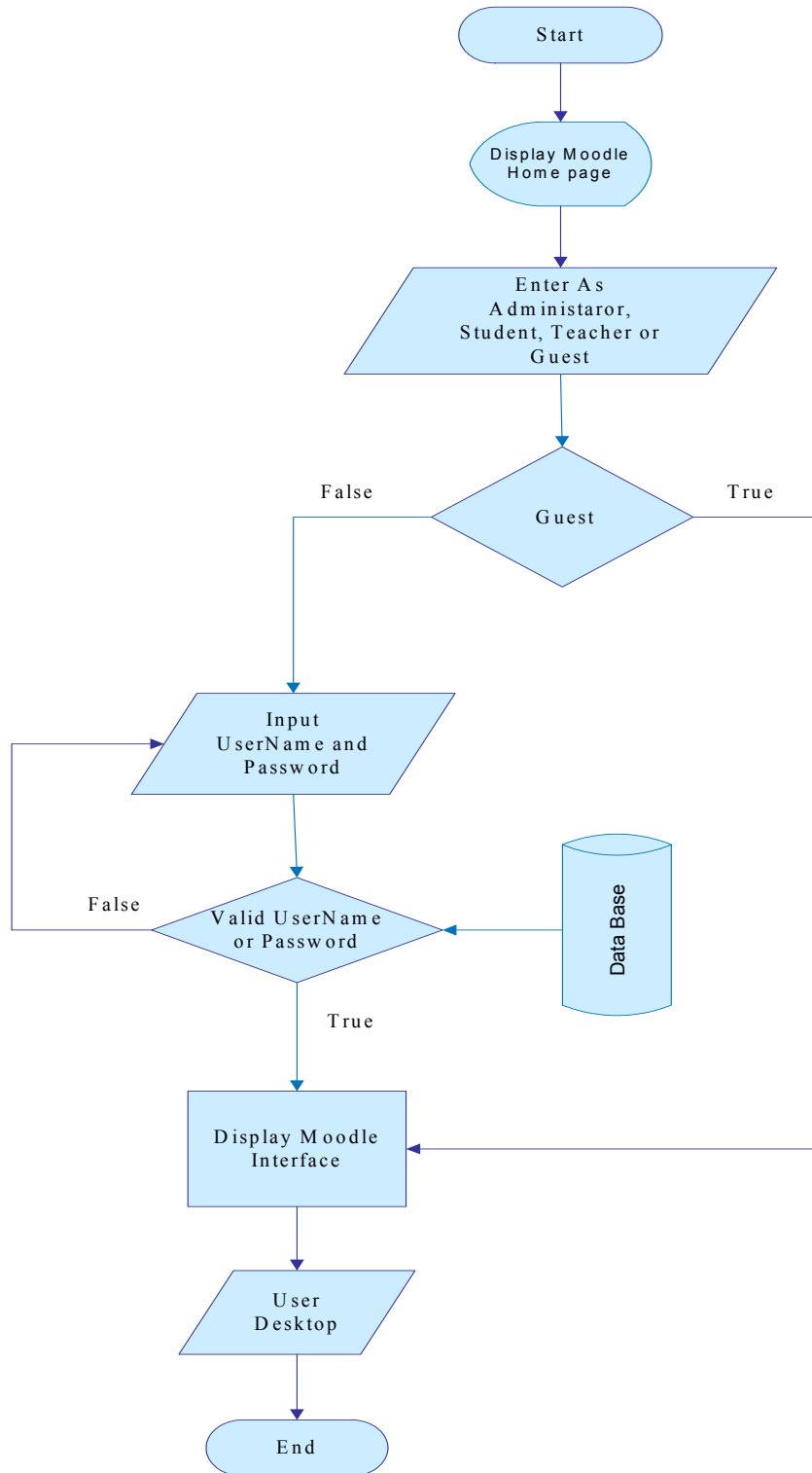


Figure 6.2 Moodle Login Flowchart

6.4 Navigation Map:

6.4.1 Introduction:

A navigation page is used primarily to help users locate and link to destination pages. A website's navigation scheme and features should allow users to find and access information effectively and efficiently.

The navigation scheme you set up for your Web site acts as its road map, with clearly marked destinations, roads that intertwine, and even suggested routes. Visitors to your neck of the Net will want to know three things: where they are, where they can go, and how they can get back to where they came from.

6.4.2 Types of navigation:

The first step in developing your navigation scheme is to think about how your information is best presented. According to Information Architecture for the World Wide Web, the de facto authority on navigation, there are three basic types of navigation:

- Hierarchical :

Hierarchical applies to sites that are information-rich and are best organized as a large tree, much like a library.

- Global :

Global applies to sites where you can easily and logically jump among all points; this is best if you are presenting information in fewer, broader categories.

- Local :

Local navigation sits somewhere in between. This applies when you have depth of information within broader areas.

After describing each navigation map type, the project team decides to use the Global navigation map, in that the system allows the user to jump easily and logically among all points between all the pages.

The following figure describes the e-learning project navigation map by using MOODLE software:

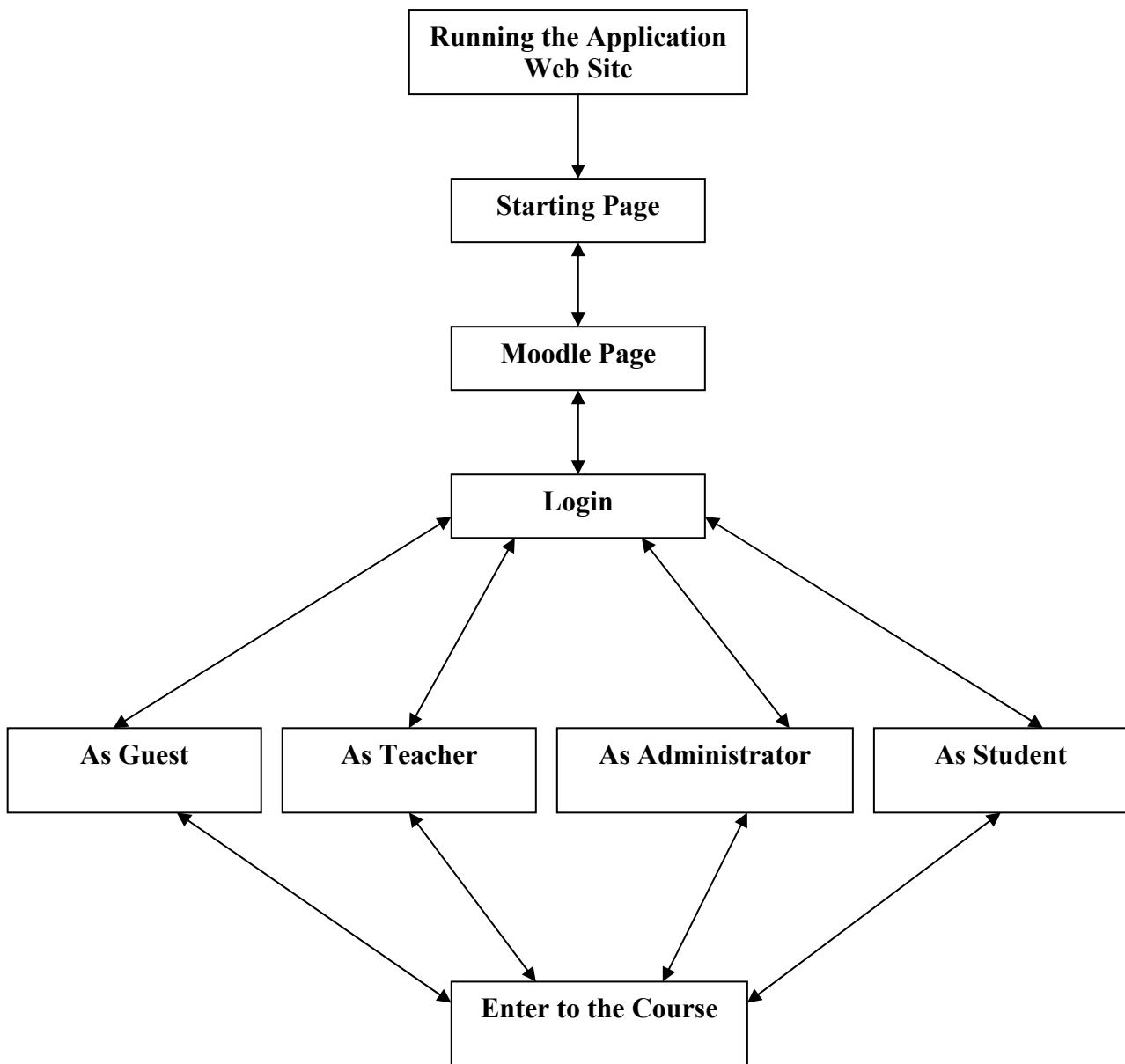


Figure 6.3 Moodle Login Navigation Map.

Navigation Map for Administrator

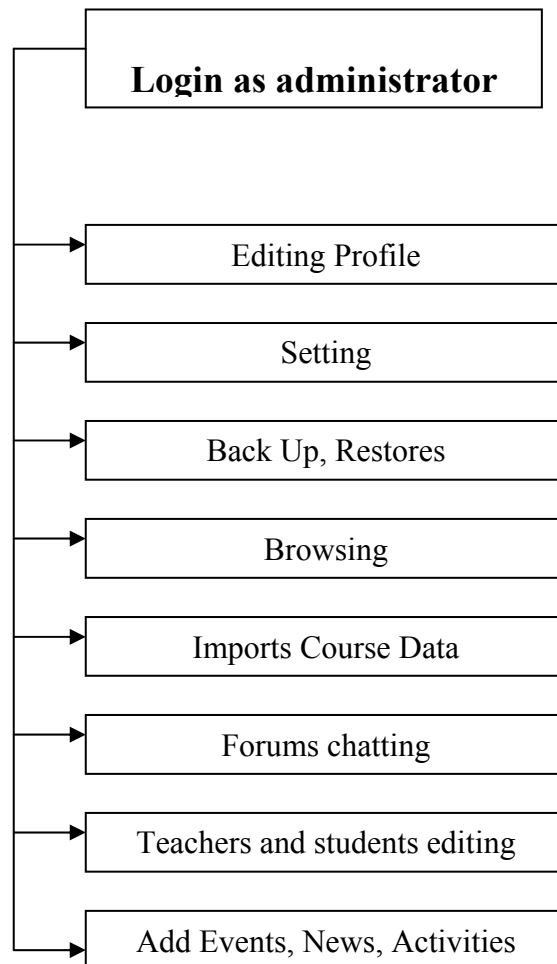


Figure 6.4 Administrator's Navigation Map

Navigation Map for Teacher

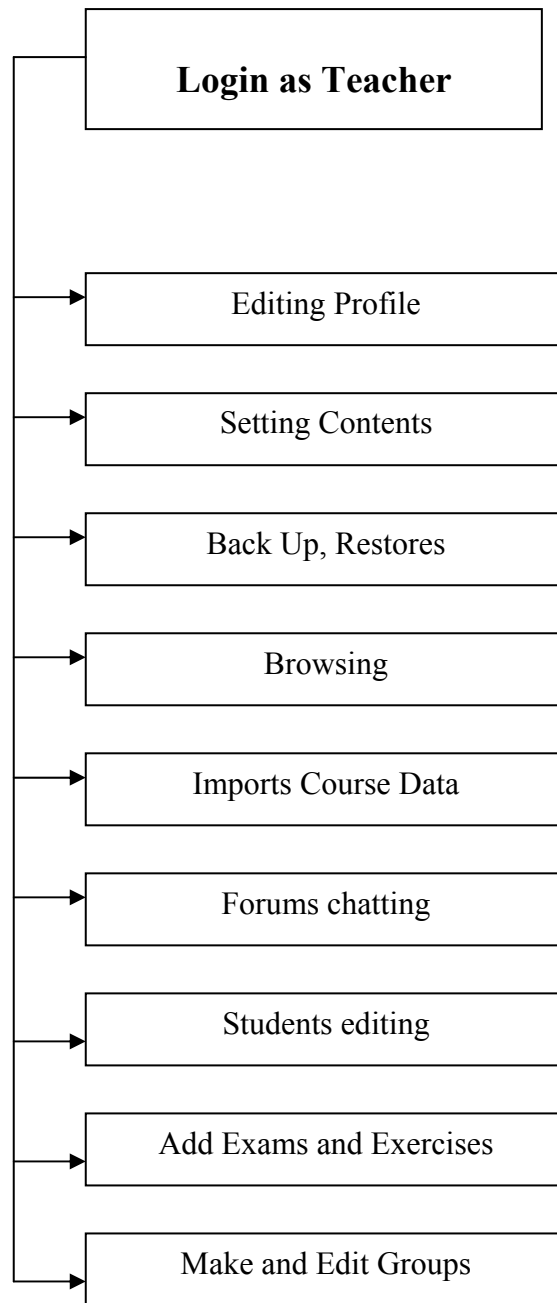


Figure 6.5 Teacher's Navigation Map

Navigation Map for Student

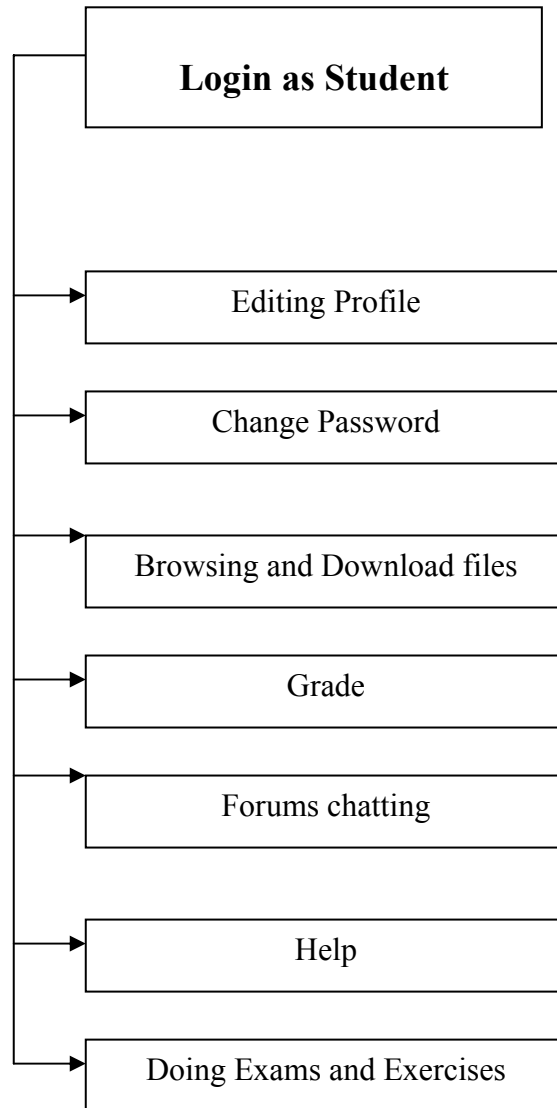


Figure 6.6 Student's Navigation Map

Navigation Map for Guest

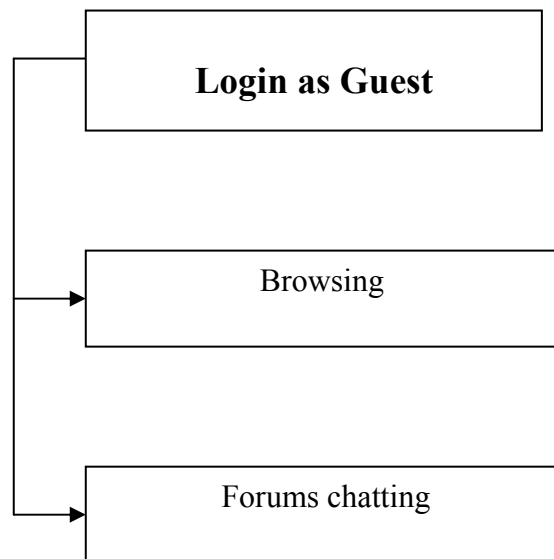


Figure 6.7 Guest's Navigation Map

The following figure describes the e-learning project navigation map by using Autorun CD:

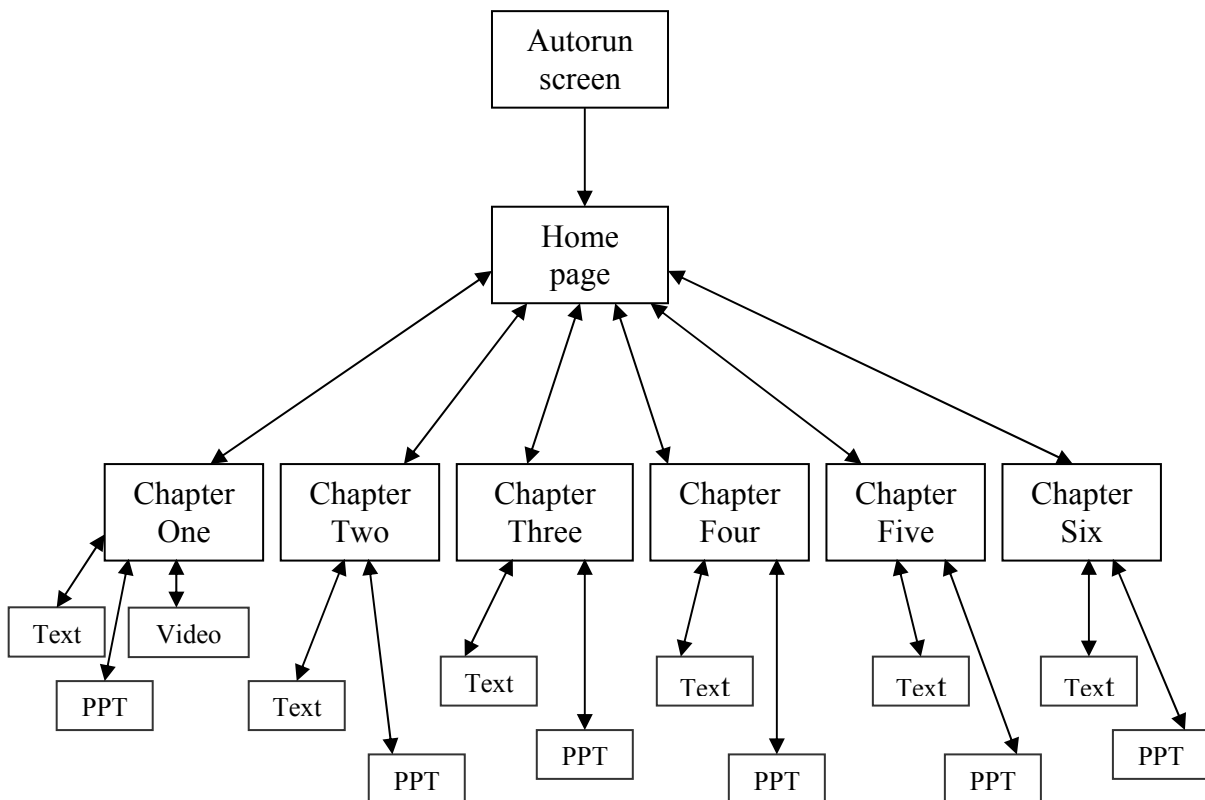


Figure 6.8 CD's Navigation Map.

6.5 Story Boards:

6.5.1 Introduction:

A storyboard is a graphic, sequential depiction of a narrative. It is a visual document depicting the style, layout, action, navigation and interactivity on every screen of the document. The storyboard organizes the content and functionality of the presentation.

In this section we will describe the initial story board that wanted to design in order to be implemental interface.

This method is very important for the designers, that it can organize the work path and give the actual project dimensions. The following screens will describe the initial story board for the first interface using Moodle:

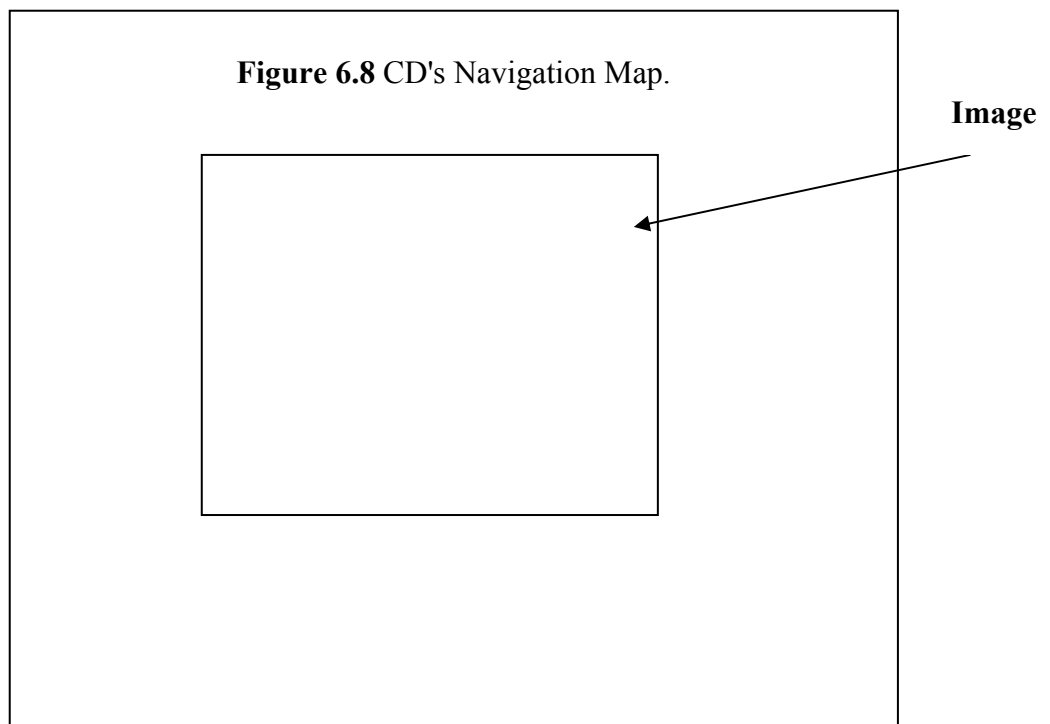


Figure 6.9 Staring Screen Story Board.

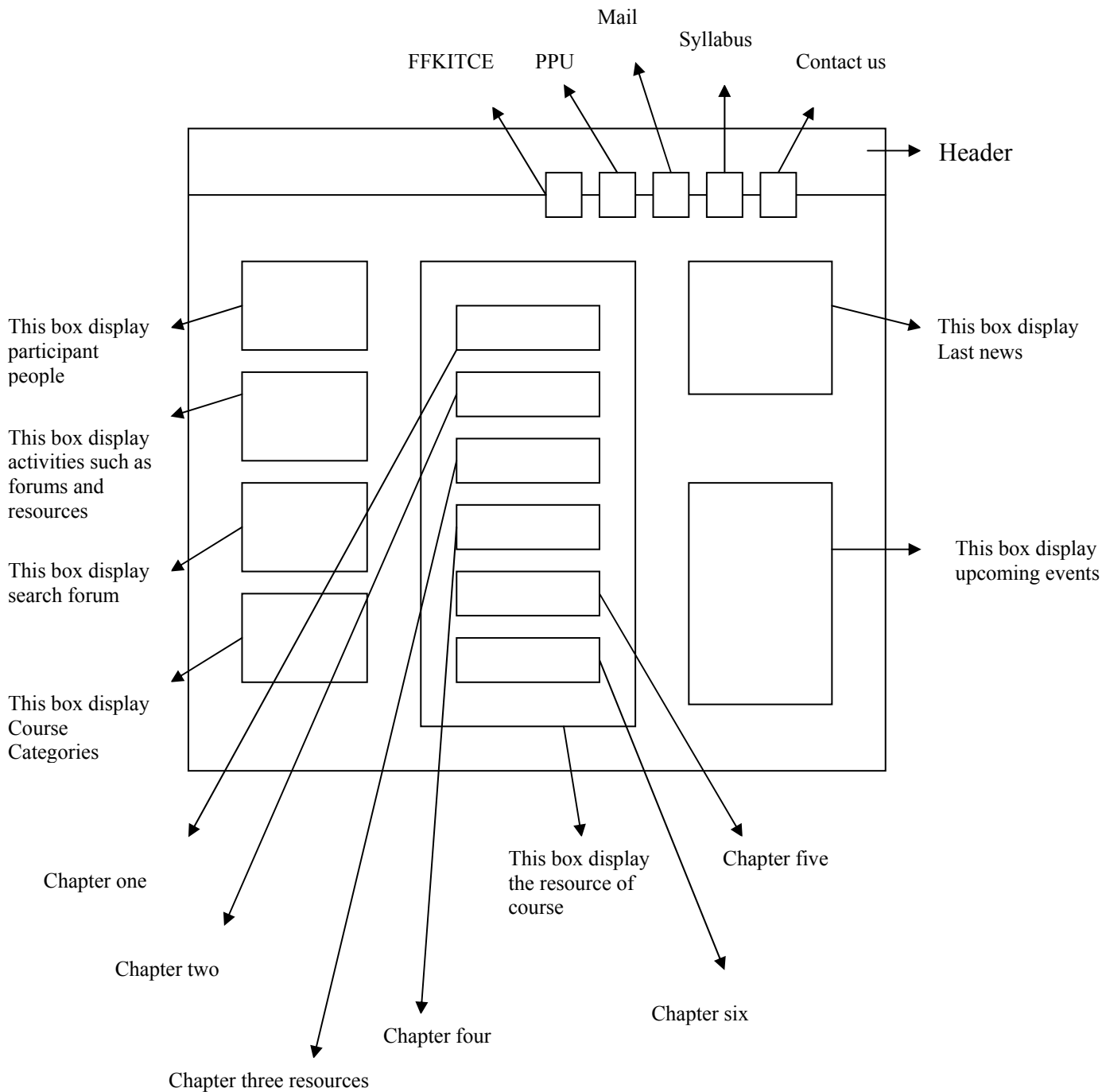


Figure 6.10 Moodle Page Story Board.

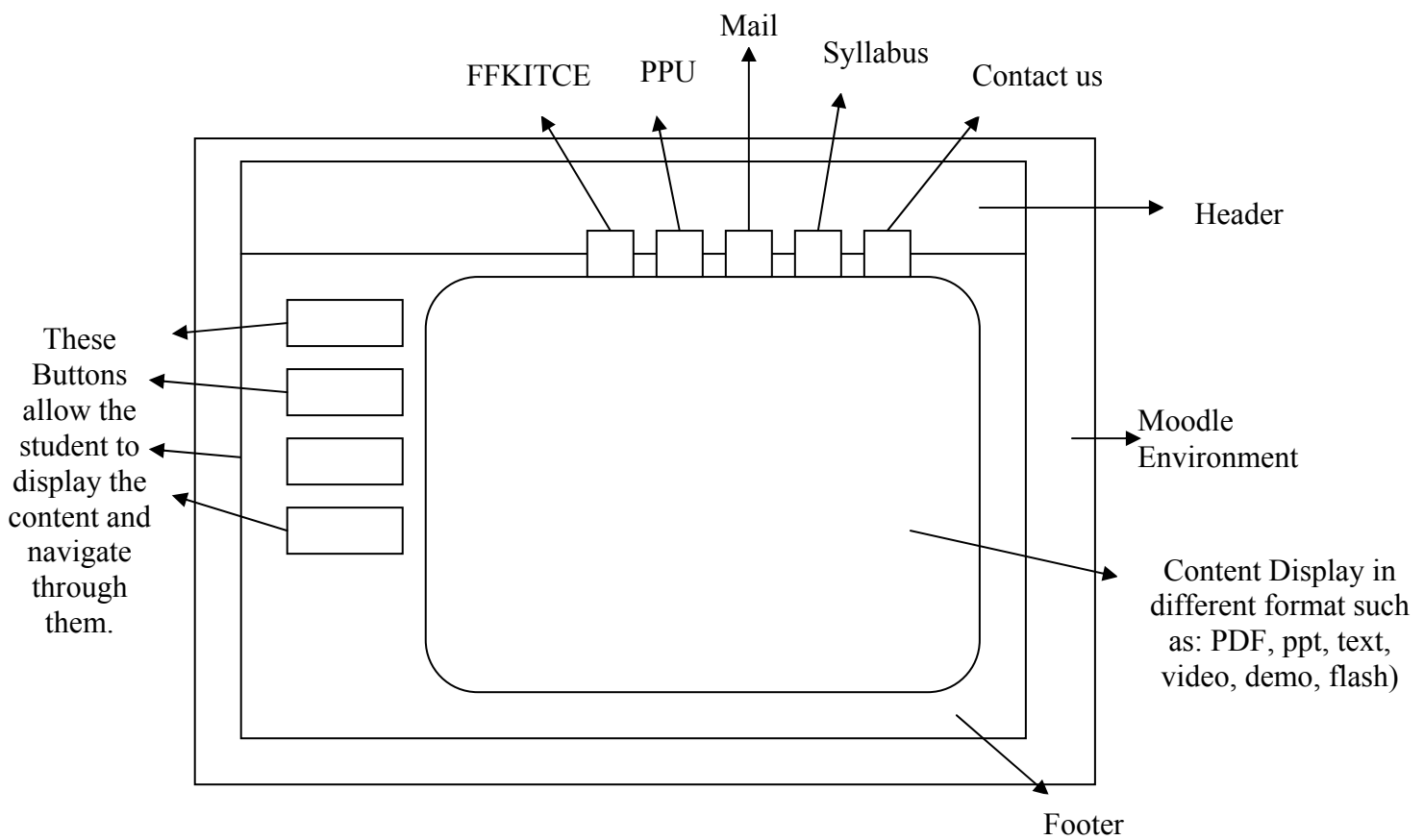


Figure 6.11 Course's Page Story Board.

The following figures will describe the e-learning project storyboard by using Autorun CD:

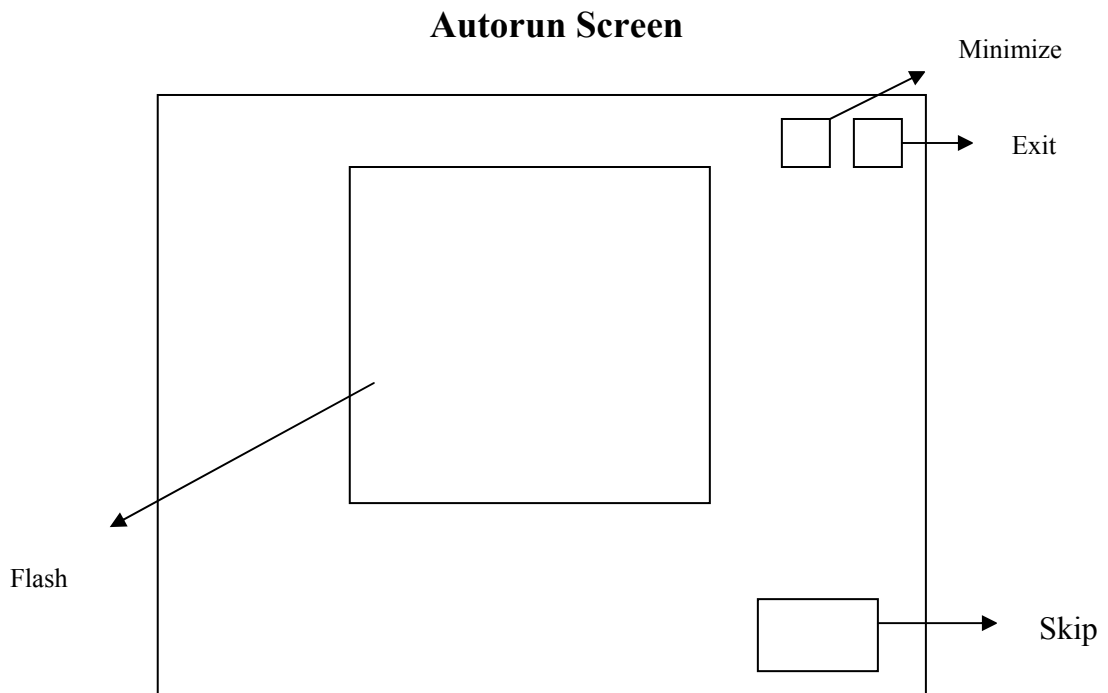


Figure 6.12 Story Boad of CD's Starting Page.

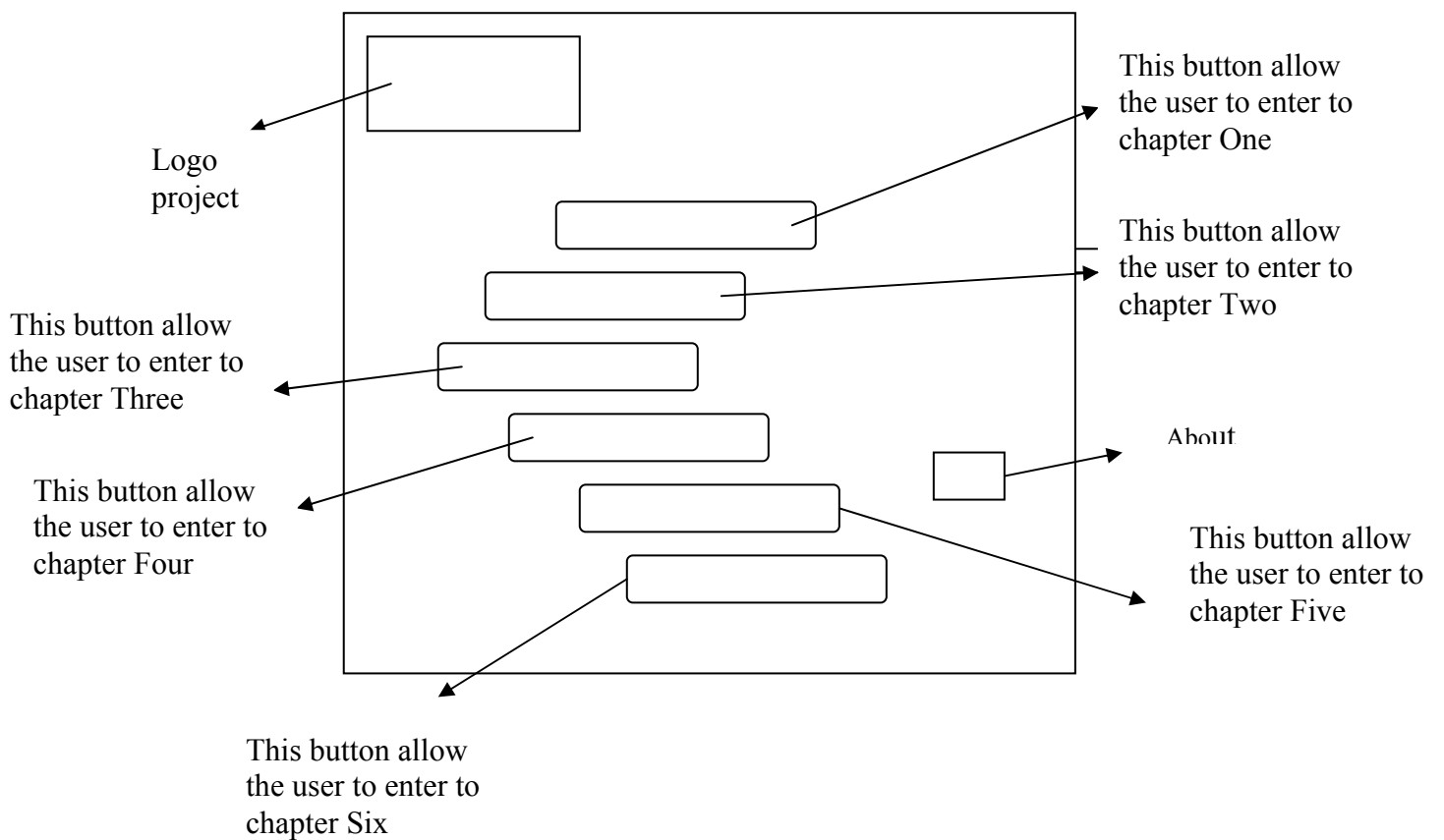


Figure 6.13 Story Boad of CD's Starting Page.

This screen will appear when the students select one choice of buttons which enable them to enter to one chapter.

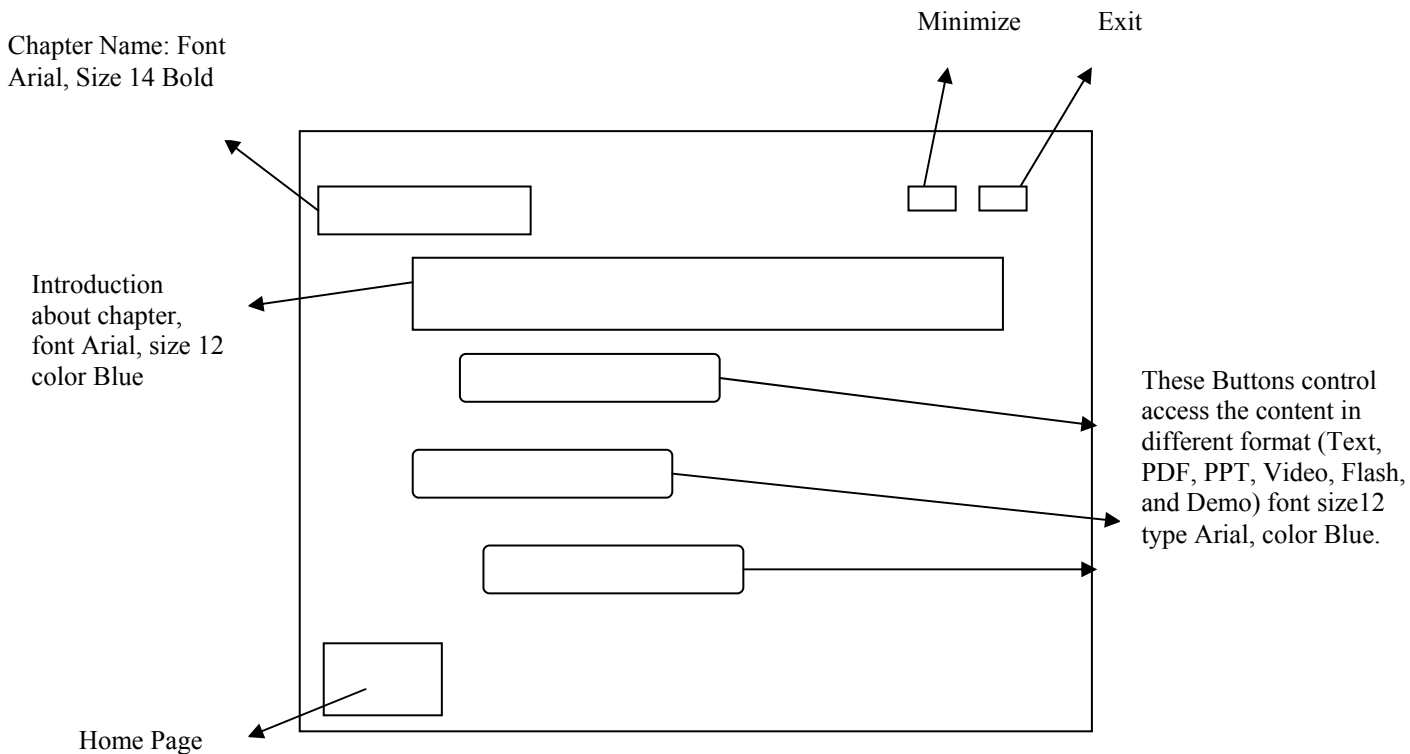


Figure 6.14 Example of CD's Story Board.

6.6 Data Dictionary:

Data dictionary is one method that is used for accurate data documentation. It used for documenting the special information about image, sounds, flash, demo and video files.

6.6.1 Image files:

The project team uses a number of images with different image formats:

1. **JPG:** An efficient method for storing graphic files for transmission across phone lines. Unlike GIF files, JPG files lose a little data when the image is converted,

and their files are often much larger than GIFs. However, JPGs are your best choice for photographic images.[18]

2. **GIF:** A common format for image files, especially suitable for images containing large areas of the same color. GIF format files of simple images are often smaller than the same file would be if stored in JPEG format, but GIF format does not store photographic images as well as JPEG.[19]

The project team mostly has used the GIF file format according to its small size.

6.6.2 Sound file:

The project team uses a number of sounds with different sound formats:

1. **MP3:** MP3 is an audio file format, based on MPEG (Moving Picture Expert Group) technology. It creates very small files suitable for streaming or downloading over the Internet.[20]
2. **WAV:** A digitized sound file format for Microsoft Windows which can have various qualities of sound depending on how they are created or saved, but the most common is 44,100 Hz, 16 bit, stereo (equivalent to audio track on CD).

The project team uses the Sound Forge in producing, adding effects, separating and mixing different sound. In addition, the team uses Adobe Premier Program and Macromedia Captivate program in recording sounds that produce sound with MP3 format that the team used according to its small size.

6.6.3 Video files:

The project team uses a number of videos with different video formats:

1. **AVI:** AVI stands for Audio Video Interleave; AVI is developed by Microsoft and is a special case of the RIFF (Resource Interchange File Format); An AVI file can use different codecs and formats so there is no set format for an AVI files unlike for example standard VCD video which sets a standard for resolution, bit rates, and codecs used.
2. **WMV:** Microsoft's proprietary compression format for motion video, Windows Media Video is used for both streaming and downloading content via the Internet. Microsoft's Windows Media Player, an application bundled with

Windows XP operating systems, lets you playback and manage a range of audio and video file types, including, of course, WMA and WMV.[9]

As the previous explanation, the project team used the two video formats of AVI and WMV in supporting the Web page with videos that run using windows media player according to their characteristics.

6.7 Database Data Dictionary:

The following table describes an external database table required to connect with the Moodle database tables which are classified into the user and the course tables.

Field	Type	Attributes	Null	Default	Extra
id	Int(10)	UNSIGNED	No		Auto increment
Courseid	Int(10)	UNSIGNED	No	0	
userid	Int(10)	UNSIGNED	No	0	

TABLE 6.1 External Database Table.

This table facilitates the teacher work of managing the course's students by allowing the teacher to know the registered students without any need of searching the student's course.

6.8 Test Plan:

Here the team describes briefly the methodology that the team has adapted to test the system steps that will be followed in the system testing as described below:

Testing Steps:

1. Unit testing:

Unit testing is one of the testing types that depend on separating or dividing the system into components to be tested separately to ensure that they are operating correctly and that meet the specifications.

2. Sub-system testing:

Subsystem testing is another testing type that depends on testing the related system components, so it can be tested without other system components.

3. Integration testing:

The integration testing which depends on testing all components together as a whole system to ensure that the system works properly and meets the specification.

4. System testing:

System testing is one of the most important stages at all software projects to ensure that the system meets its specifications and is working as properly as expected, and that it avoids any problems and errors.

System Implementation

- *Introduction.*
- *System Implementation's Infrastructure.*
- *Setting up the Required H/W and S/W.*
- *MOODLE Implementation.*
- *Operating the System.*

7.1 Introduction:

In this chapter the team will tackle in detail the process of implementation the system and the environment that used in those processes.

Conveying the development and evaluation of the modern technology and learning fundamentals for using the communication internet and multimedia tools, it becomes important to develop the appropriate environment in order to implement and operate such e-learning project and its components. This environment consists of hardware and software components that are required for the operation process and how they are installed and prepared to allow the system to be operated successfully.

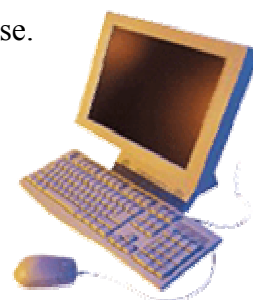
In this chapter, the team will tackle in details each application of hardware and software requirements according with their needed configuration to implement the system software.

7.2 System Implementation's Infrastructure:

- **Hardware Environment:**

For the system implementation the team is using the following hardware:

1. Desktop computers Pentium IV.
 - 2 GHz, 512 MB RAM 40 GB HD, Monitor15, Keyboard and Mouse.
2. Desktop computers (Special).
 - P4, 3 GHz, 1 GB RAM, 30 GB HD.
3. Speakers.
4. Color Printer (HP DeskJet 6840 Printer series) with scanner.
5. Network Adapter.
6. DSL Modem.
9. Microphone.



- **Software Environment:**

1. Microsoft windows XP Professional.
2. Microsoft Office 2003 Professional Edition.

3. Microsoft Visio upgrade version.
4. PhotoShop V.8.
5. Macromedia Flash Mx 8.
6. Turbo Demo 7.
7. Macromedia Captivate.
8. MySQL.
9. ASP.Net 2005.
10. VRML.
11. DSL Connection (128 KB).
12. Internet Explorer.
13. Adobe Acrobat Reader.
14. Windows Media Player.
15. AutoRun Program.

7.3 Setting up the Required H/W and S/W:

1. Network Setting:

The system must operate on a network that consists of a server, client, cables and software required to operate the network and the system.

2. Setting Hardware and Operating System:

The operating system required for the server side is Windows 2000, Windows NT, Windows Millennium, Microsoft Windows XP professional, and the client side is the same. The team chooses to install Microsoft Windows XP professional which is a powerful operating system; it supports many features needed in this project. Hardware requirements are seven PC's and other supporting hardware tools as it is mentioned above.

3. Installing MySQL:

"MySQL, the most popular Open Source SQL database, is developed and provided by MySQL. MySQL is a commercial company that builds its business providing services around the MySQL database.

MySQL is a database management system. A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate Network. To add, access, and process data stored in a computer database, you need a database management system such as MySQL Server. Since computers are very good at handling large amounts of data, and database management. [1]

"MySQL is downloaded free of charge. It was downloaded from this link: <http://www.mysql.com/downloads/>. After downloading the file (is about 12MB), it was unzipped and run the setup.exe program contained there in. Mysqld-nt.exe. this version of the MySQL is designed to run under Windows NT/2000/XP as a service and the operating system in this system is Windows XP. [3]

- The Reasons of Using MySQL Database Server:

"The MySQL Database Server is very fast, reliable, and easy to use. If that is what you are looking for, you should give it a try. MySQL Server also has a practical set of features developed in close cooperation with the users. One may find a performance comparison of MySQL Server to some other database managers.

MySQL Server was originally developed to handle large databases much faster than existing solutions and has been successfully used in highly demanding production environments for several years. Though under constant development, MySQL Server today offers a rich and useful set of functions. Its connectivity, speed, and security make MySQL Server highly suited for accessing databases on the Internet. [1]

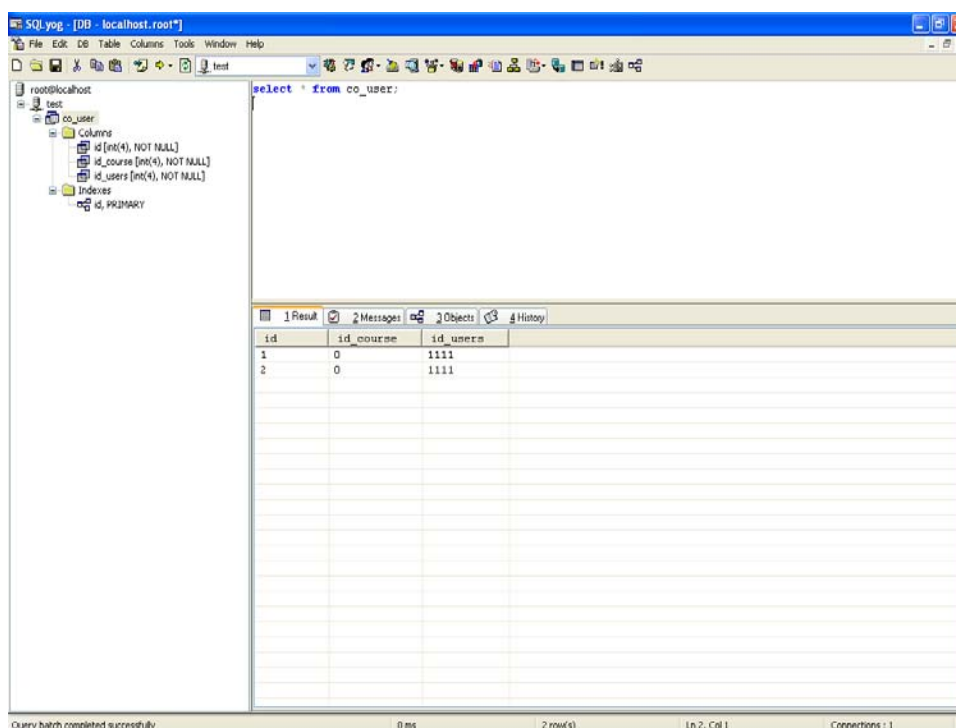


Figure 7.1 Creating Data Base Table.

4. Installing PHP:

PHP is a Hypertext Preprocessor which is an open source server side programming language extensively used for web scripts and to process data passed via the Common Gateway Interface from HTML forms etc.

PHP stands for Personal Home Pages which is a popular scripting language used to create powerful and dynamic Websites. It is currently in use on over five million Websites around the world.

PHP can be written as scripts that reside on the server and may produce HTML output that downloads to the web browser. Alternatively, PHP can be embedded within HTML pages that are then saved with a php file extension. The PHP sections of the page are then parsed by the PHP engine on the server and the PHP code stripped out before the page is downloaded to the web browser. [9]

-The Reasons of Using PHP:

- ▶ Easy to learn and use.
- ▶ Works with different languages in creating web pages.
- ▶ New features can be added easily.
- ▶ High compatibility with Windows and other environments.
- ▶ Better to be used on the internet pages.

5. Installing Visual Basic.Net 2005:

Latest version of Microsoft Visual Basic programming language [released Nov 2005]. VB.NET is a full-blown programming language that shares the common Language runtime and .NET framework class library with the other .NET Languages.

- The Reasons of Using Visual Basic.Net 2005:

- ▶ Ease of use.
- ▶ Integrated development environment.
- ▶ Supports multiple languages within the project.
- ▶ Supports debugging, tracing and error handling.
- ▶ GUI supported development.
- ▶ Large collection of built in controls.
- ▶ Work scenario is a Project.
- ▶ Customizable interface.

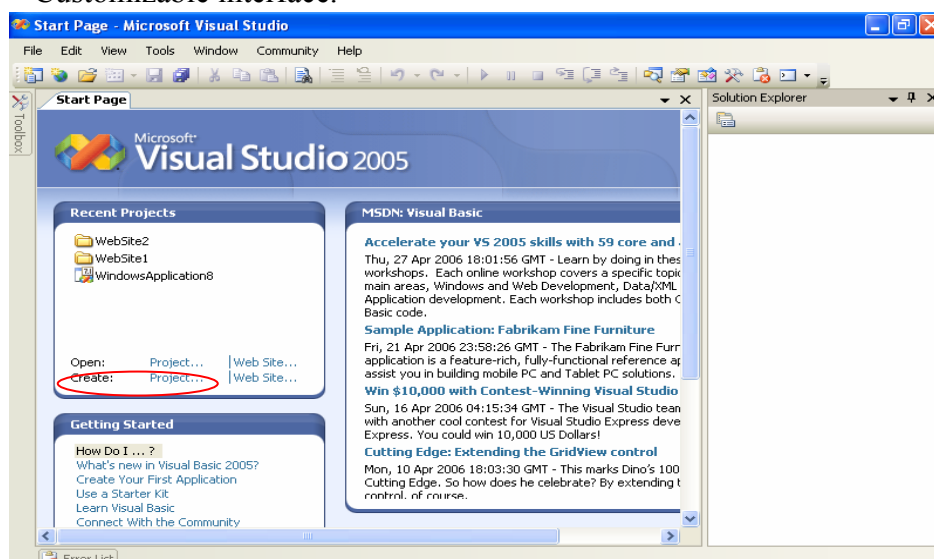


Figure7.2 Selecting VB Windows Application.

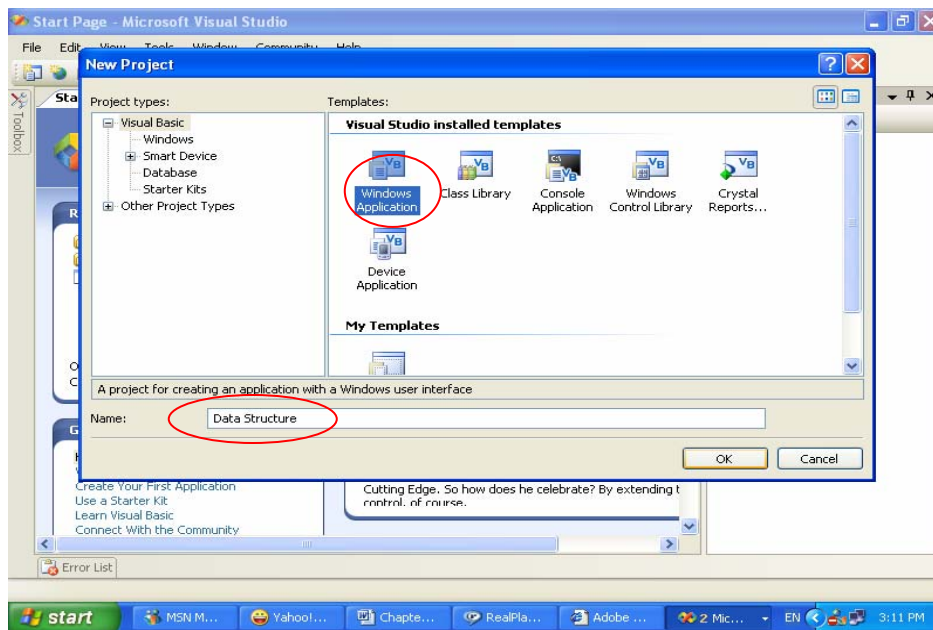


Figure7.3 Creating and Naming VB Windows Application.

6. Installing Macromedia flash:

Macromedia Flash Player is the standard for delivering high-impact, rich Web content. Designs, animation, and application user interfaces are deployed immediately across all browsers and platforms, attracting and engaging users with a rich Web experience. [21]

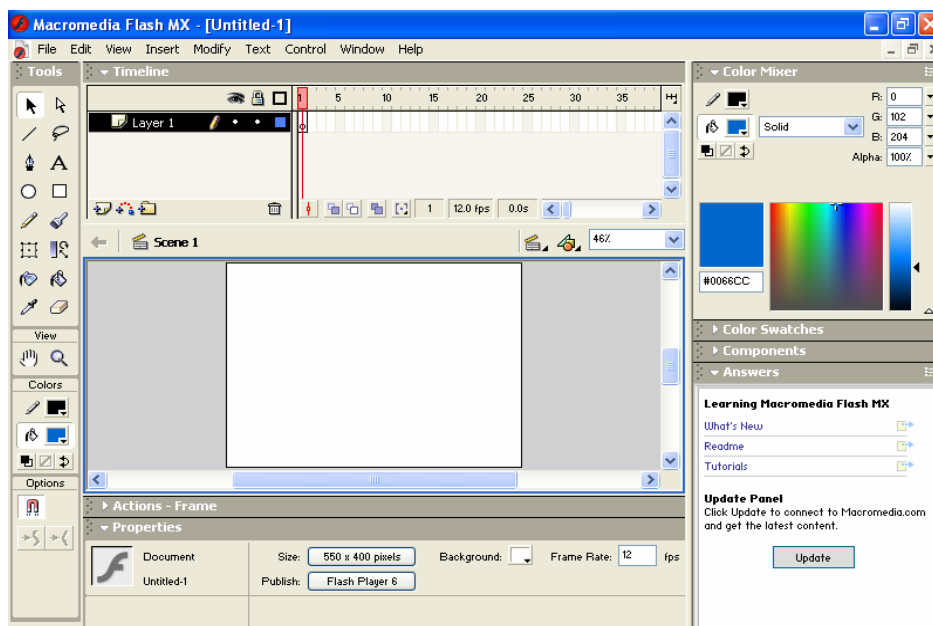


Figure7.4 Macromedia Flash Page.

7. Installing TurboDemo:

With TurboDemo the user will be able to create professional online and offline demos/tutorials in just a few minutes. This powerful and easy-to-use program let's the user create fantastic interactive demos, tutorials, software simulations and movies in just minutes. Turbo Demo helps the user (authors) to create Flash, Java, Exe, AVI and Standalone Demos/Tutorials. [22]

- The Reasons of Using Turbo Demo 7:

- ▶ Recording is Made Easy and Fast.
- ▶ Create Demos in Just a Few Minutes.
- ▶ Easy to Use, Intuitive Editing.
- ▶ Small and Fast Demos.

- ▶ Supports Special Effects like: animated notes and balloons, etc .
- ▶ Supports Interactive Areas like: Click area (left-, right- and double-click).
- ▶ Supports Export and additional Options.



Figure7.5 Selecting TurboDemo New Project.

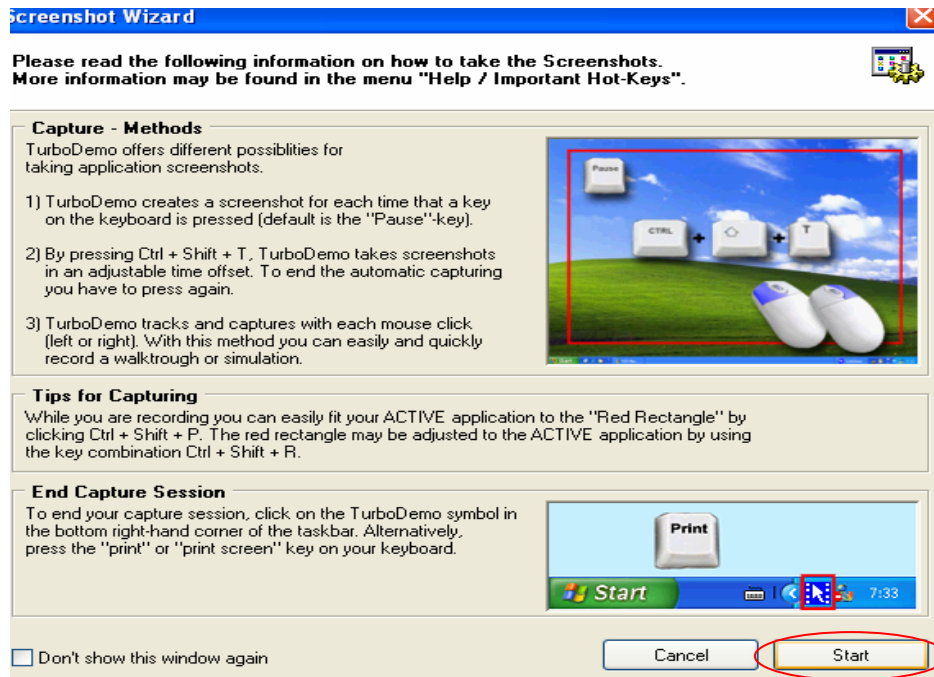


Figure7.6 Starting TurboDemo New Project.

8. Macromedia Captivate:

Macromedia Captivate (formerly TurboDemo) automatically records all onscreen actions and instantly creates an interactive Flash simulation. Point and click to add text captions, narration, and e-learning interactions without any programming knowledge.

Captivate can automatically generate text captions for you, allowing you effortlessly to generate fully annotated simulations and demos. You can use these simulations as an effective way to show your applications. [9]

Enhance your simulations by easily adding:

- Captions, audio, and images
- Flash animations and video
- Interactions with branching and scoring
- Highlights, hyperlinks, rollovers, and more

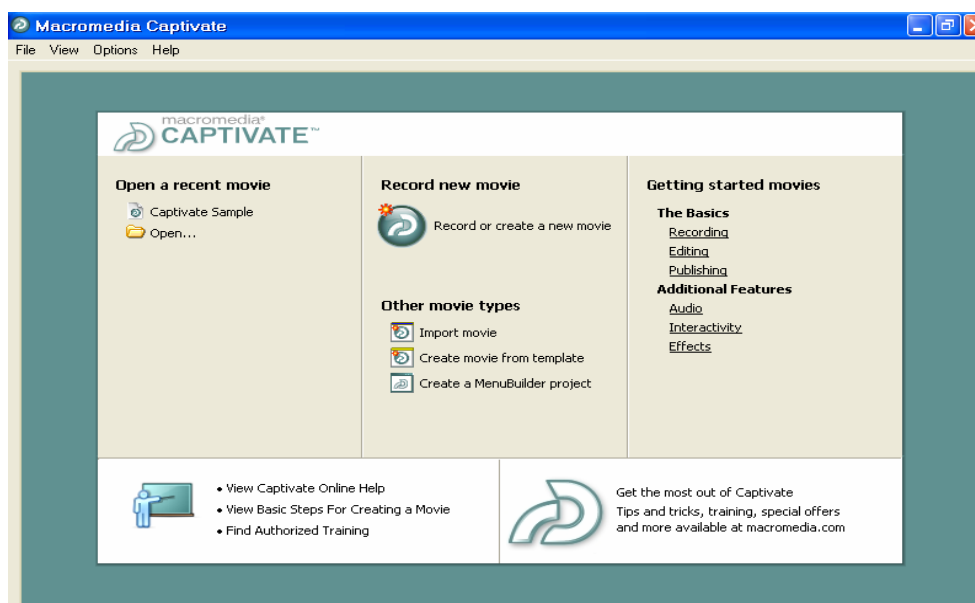


Figure7.7 Selecting New Captivate Page.

9. Installing Photoshop:

Adobe Photoshop is a tool for creating digital graphics either by starting with a scanned photograph or artwork or by creating the graphics within the program. Photoshop can help the user to resize, retouch, and color digital images, and moreover, add other computer effects.

Photoshop is a graphics based program created with images known as raster graphics. Other graphic applications, i.e. Illustrator, Corel Draw and Freehand, create vector graphics. Vector graphic are composed of solid lines, curves and other geometric shapes that are defined by a set of mathematical instructions. Vector images work best for type and other shapes that require clear crisp boundaries. Raster images work best with photographs. Raster graphics are comprised of a raster (a grid) of small squares called pixels. Objects in Photoshop are groups of many pixels – each of which can be a different color. Raster images require more memory and storage than vector images. [9]

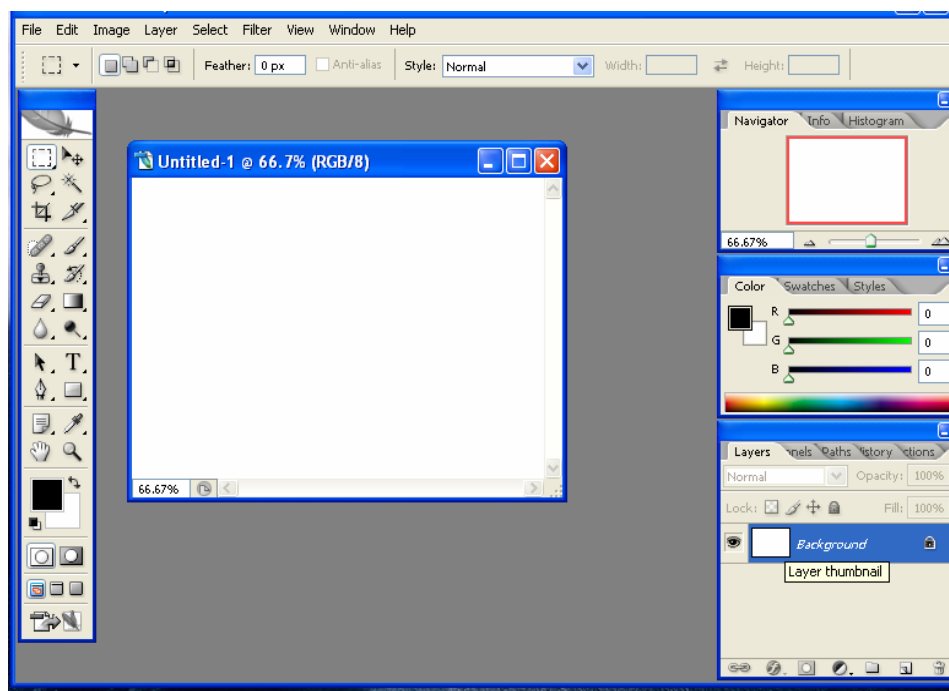


Figure7.8 Starting Photoshop Page.

10. Installing VRML:

VRML is a text file format where, e.g., vertices and edges for a 3D polygon can be specified along with the surface color, image-mapped textures, shininess, transparency, and so on. URLs can be associated with graphical components so that a web browser might fetch a web-page or a new VRML file from the Internet when the user clicks on the specific graphical component. Animations, sounds, lighting, and other aspects of the virtual world can interact with the user or may be triggered by external events such as timers. A special Script Node allows the addition of program code (e.g., written in Java or JavaScript (ECMAScript)) to a VRML file.

VRML files are commonly called worlds and have the .wrl extension (for example island.wrl). Although VRML worlds use a text format they may often be compressed using gzip so that they transfer over the internet more quickly. Most 3D modeling programs can save objects and scenes in VRML format. [9]

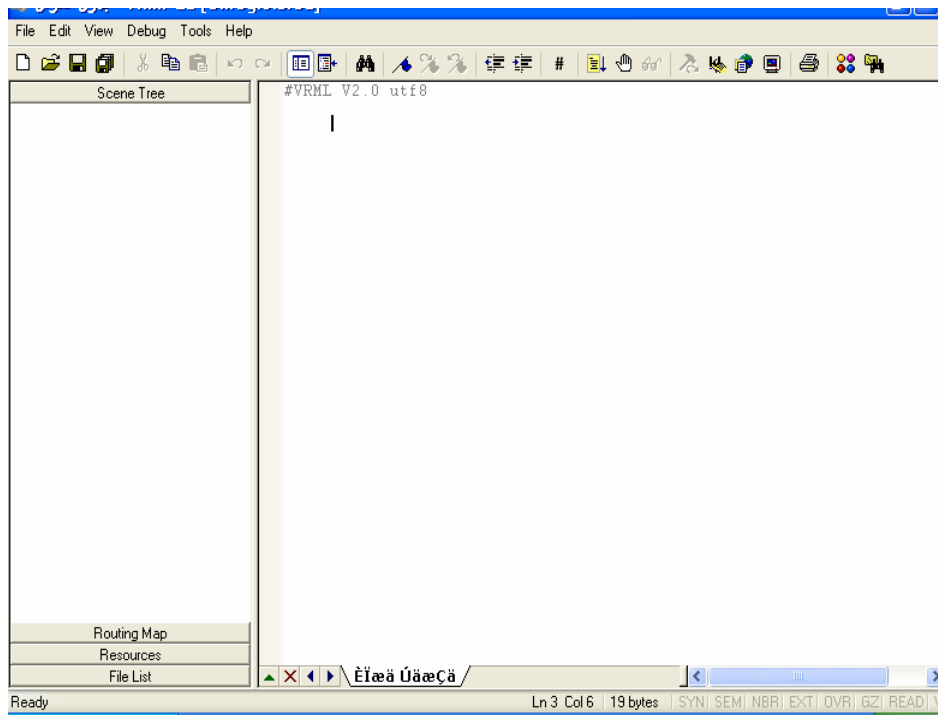


Figure7.9 VRML Design Page.

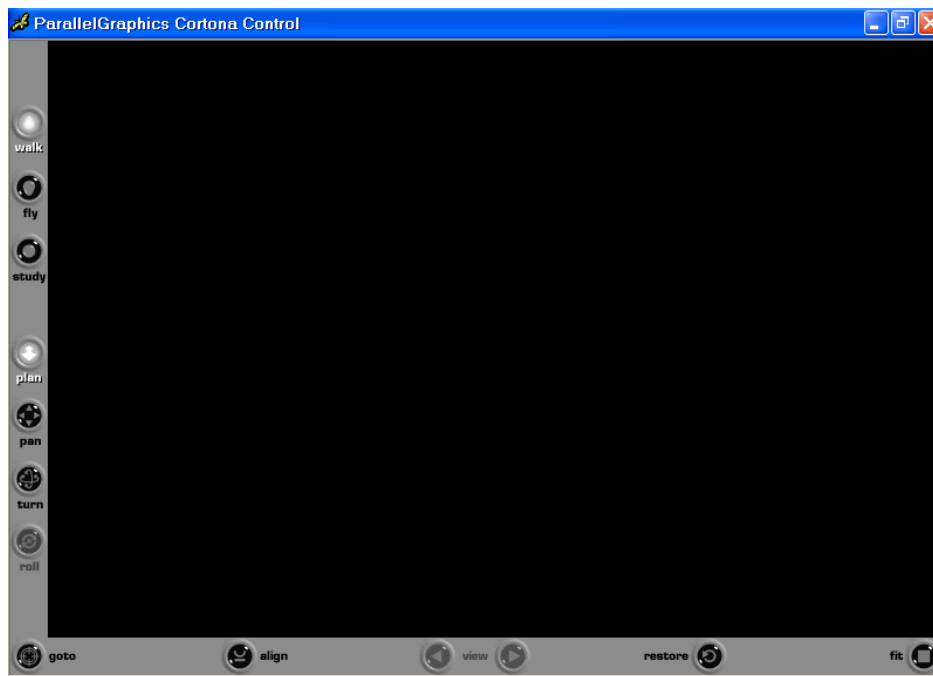


Figure7.10 VRML Run Page.

11. Installing Microsoft Office:

Microsoft Office is a suite of productivity programs created by Microsoft and developed for Microsoft Windows and Apple Macintosh operating systems. As well as the office applications, it includes associated servers and Web-based services. Recent versions of Office are now called the 'Office System' rather than the 'Office Suite' to reflect the fact that they include Servers as well.

Office made its first appearance in the early '90s, and was initially a marketing term for a bundled set of applications that were previously marketed and sold separately.

The main selling point was that buying the bundle was substantially cheaper than buying each of the individual applications on their own. The first version of Office contained Word, Excel and PowerPoint.

- Microsoft Office word:

Microsoft Word is a word processor. It is considered to be the main program of Office. It possesses a dominant market share in the word processor market. Its proprietary DOC format is considered a de facto standard, although its most recent version, Word 11.0/2003, also supports an XML-based format. Word is also available in some editions of Microsoft Works. It is available for the Windows and Macintosh platforms.

-Microsoft Power Point:

Microsoft PowerPoint is a powerful tool to create professional looking presentations and slide shows. PowerPoint allows you to construct presentations from scratch or by using the easy to use wizard.

-Microsoft FrontPage:

FrontPage is a software application for creating and modifying entire Websites or single Web pages. This program in its normal view provides a simple interface for novice users to create and design simple yet elegant Web pages.

FrontPage also offers an HTML interface for more experienced users with color-coded command lines and organized formatting. After creating the Web page using FrontPage it still needs to be posted up to a server for the website to become part of the Internet. . [9]

12. Installing Adobe Acrobat Reader.

Adobe Acrobat was the first software to support Adobe Systems' Portable Document Format (PDF). It is mostly described in those entries. The Acrobat Reader program (now just called Adobe Reader) is available as a no-charge download from Adobe's website, and allows the viewing and printing of PDF files.

Several other commercial PDF-editing programs allow some minimal editing and adding of features to documents, and come with other modules including a printer driver to create PDF files from Macintosh or Microsoft Windows applications. [9]

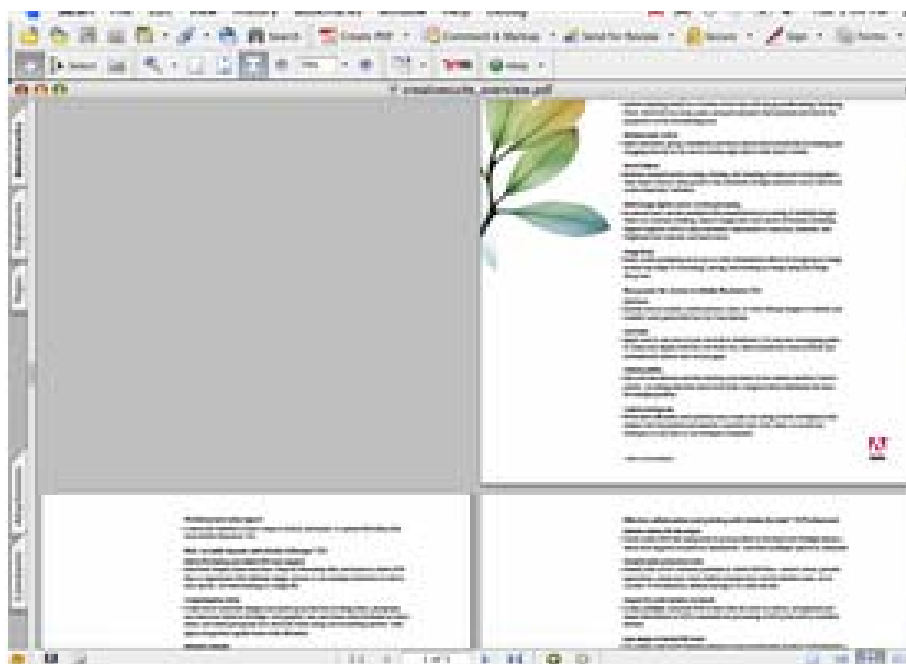


Figure7.11 Starting Adobe Acrobat Reader Page.

13. Installing Windows Media Player.

Windows Media Player is a proprietary software digital media player and media library application developed by Microsoft that is used for playing audio, video and images on personal computers running the Microsoft Windows operating system, as

well as on Pocket PC and Windows Mobile-based devices. Editions of Windows Media Player were also released for the Apple Macintosh and Solaris operating systems, but have since been discontinued.

In addition to being a media player, Windows Media Player includes the ability to rip music from, and copy music to compact discs, synchronize content with a digital audio player (MP3 player) or other mobile devices, and let users purchase or rent music from a number of online music stores.

Windows Media Player replaced an earlier piece of software simply called Media Player, adding features beyond simple video or audio playback.

The default file formats are WMV (Windows Media Video and Audio), WMA (Windows Media Audio), and ASF (Advanced Streaming Format), and supports its own XML based playlist format called WPL (Windows Play list). [9]

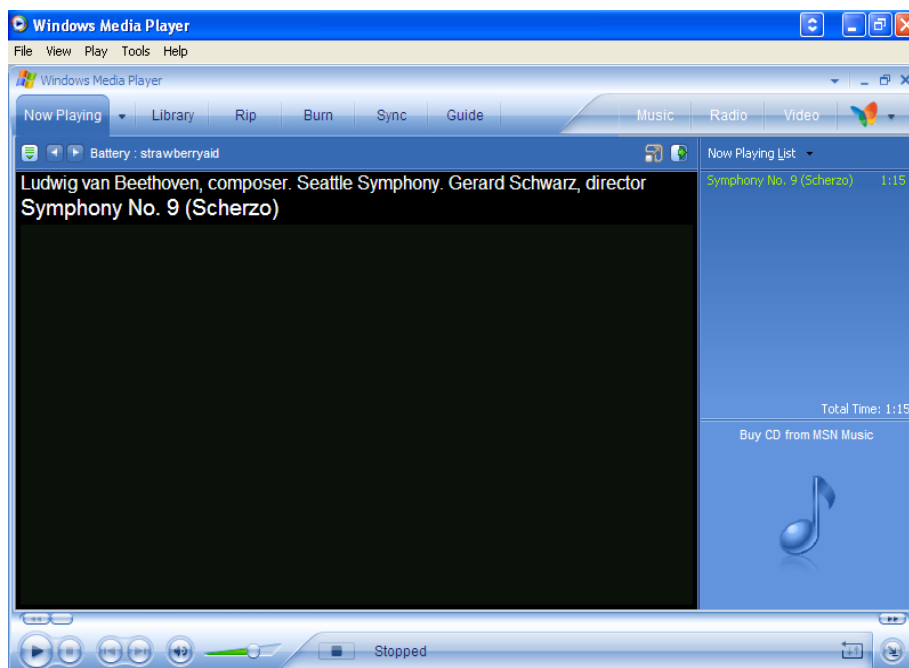


Figure7.12 Starting Windows Media Player Program.

14. AutoPlay Media Studio - Application - V6.0:

Build professional AutoRun CD/DVD ROMs, interactive presentations, custom Windows software, and much more. AutoPlay Media Studio is a powerful development tool that will allow you to easily integrate your existing audio, video, images, text, Macromedia Flash, Web sites, and scripts by simply dragging and dropping the media files directly into your project. AutoPlay Media Studio has a friendly, easy to use interface, which doesn't require any programming knowledge to use.



Figure 7.13 Starting AutoRun Program.

7.4 MOODLE Implementation:

► Installation Requirements:

Moodle is primarily developed in Linux using Apache, MySQL and PHP (also sometimes known as the LAMP platform), but is also regularly tested with PostgreSQL and on Windows XP, Mac OS X and Netware 6 operating systems. The requirements for Moodle are as follows:

- Web server software. Most people use Apache, but Moodle should work fine under any web server that supports PHP, such as IIS on Windows platforms.
- PHP scripting language (version 4.1.0 or later). PHP 5 (version 5.1.0 or later) is supported as of Moodle 1.4. From Moodle version 1.6, the minimum version of PHP will be 4.3.
- A working database server: MySQL or PostgreSQL are completely supported and recommended for use with Moodle. MySQL is the choice for many people because it is very popular, but there are some arguments in favour of PostgreSQL, especially if you are planning a large deployment. The minimum version of MySQL is currently 3.23. Please note that MySQL 4.1.16 is the minimum version for Moodle 1.6.

Most web hosts support all of this by default. If you are signed up with one of the few web hosts that does not support these features ask them why, and consider taking your business elsewhere.

Additional requirements of a PHP Extensions are as follows:

- GD library and the Free Type 2 library on Linux/Unix boxes to be able to look at the dynamic graphs that the logs pages make.
- Mbstring - is required for multi-byte string handling. The mysql extension is required if you are using the MySQL database. Note that in some Linux distributions (notably Red Hat) this is an optional installation.
- The pgsql extension is required if you are using the PostgreSQL database.
- The zlib extension is required for zip/unzip functionality.

- Other PHP extensions may be required to support optional Moodle functionality, especially external authentication and/or enrolment (e.g., LDAP extension).

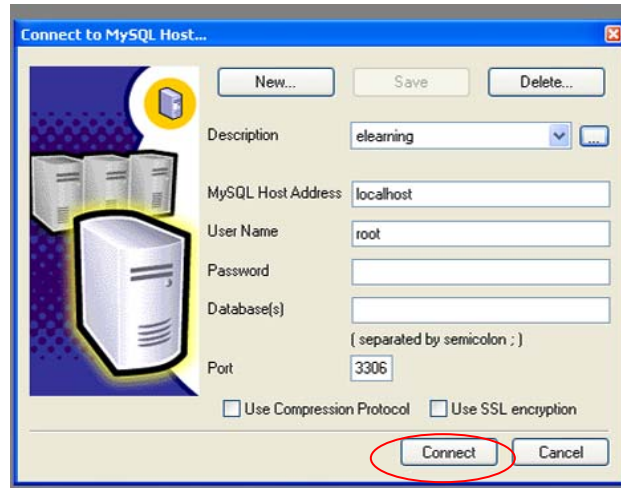


Figure 7.14 connecting to MySQL.

➤ **Download and copy files into place:**

There are two ways to get Moodle, as a compressed package or via CVS. After downloading and unpacking the archive, or checking out the files via CVS, you will be left with a directory called "moodle", containing a number of files and folders.

You can either place the whole folder in your web server documents directory, in which case the site will be located at <http://yourwebserver.com/moodle>, or you can copy all the contents straight into the main web server documents directory, in which case the site will be simply <http://yourwebserver.com>.

If you are downloading Moodle to your local computer and then uploading it to your web site, it is usually better to upload the whole archive as one file, and then do the unpacking on the server. Even web hosting interfaces like Cpanel allow you to uncompress archives in the "File Manager".

➤ **Run the installer script to create config.php:**

To run the installer script (install.php), just try to access your Moodle main URL using a web browser, or access <http://yourserver/install.php> directly.

Moodle will detect that configuration is necessary and will lead you through some screens to help you create a new configuration file called config.php. At the end of the process Moodle will try and write the file into the right location, otherwise you can press a button to download it from the installer and then upload config.php into the main Moodle directory on the server.

Along the way the installer will test your server environment and give you suggestions about how to fix any problems. For most common issues these suggestions should be sufficient, but if you get stuck, look below for more information about some of common things that might be holding you up.

➤ **Check web server settings :**

Firstly, make sure that your web server is set up to use index.php as a default page (perhaps in addition to index.html, default.htm and so on). In Apache, this is done using a Directory Index parameter in your httpd.conf file.

Secondly, if you are using Apache 2, then you should turn on the AcceptPathInfo variable, which allows scripts to be passed arguments.

This is essential to allow relative links between your resources, and also provides a performance boost for people using your Moodle web site.

Thirdly, Moodle requires a number of PHP settings to be active for it to work. On most servers these will already be the default settings. However, some PHP servers (and some of the more recent PHP versions) may have things set differently.

If you don't have access to httpd.conf or php.ini on your server, or you have Moodle on a server with other applications that require different settings, and then don't worry, you can often still **OVERRIDE** the default settings.

To do this, you need to create a file called .htaccess in Moodle's main directory that contains lines like the following. This only works on Apache servers and only when Overrides have been allowed in the main configuration.

➤ **Go to the admin page to continue configuration:**

Once the basic config.php has been correctly created in the previous step, trying to access the front page of your site will take you the "admin" page for the rest of the configuration.

The first time you access this admin page, you will be presented with a GPL "shrinkwrap" agreement with which you must agree before you can continue with the setup.

Now Moodle will start setting up your database and creating tables to store data. Firstly, the main database tables are created. You should see a number of SQL statements followed by status messages and then continue with the setup.

➤ **Create a new course:**

Now that Moodle is running properly, you can try creating a new course to play with.

Select "Create a new course" from the Admin page (or the admin links on the home page). Then fill out the form, paying special attention to the course format. You don't have to worry about the details too much at this stage, as everything can be changed later by the teacher. Note that the yellow help icons are everywhere to provide contextual help on any aspect.

Press "Save changes", and you will be taken to a new form where you can assign teachers to the course. You can only add existing user accounts from this form - if you want to create a new teacher account then either ask the teacher to create one for themselves (see the login page), or create one for them using the "Add a new user" on the Admin page.

Once done, the course is ready to customize, and is accessible via the "Courses" link on the home page. [14]

7.5 Operating the system:

To operate the system successfully, the following steps must be executed before the operating the system in its environment:

- Configuring the network (physical connection).
- Setting up the required programs needed to operate the system materials and applications.
- Setting up PHP and MySQL.
- Setting up the Moodle software.
- Creating the new course by adding the required materials to the Moodle environment.

In order to operate the CD successfully, the following steps must be executed:

- Setting up the required programs needed to operate the CD's applications such as: Flash, Demo, Captivate, windows media player and others.
- Creating the CD's materials and presentations.
- Setting up the Auto Run program needed to operate the CD.

To operate the system actually in its environment, the user should follow the following steps:

- Double click on the browser.
- Putting the Moodle URL.
- Then you can make running and brows or login to the course.

System Testing

- *Introduction.*
- *System Testing.*
- *System Evaluation.*
- *Snapshots.*
- *System Maintenance.*

8.1 Introduction:

The testing and evaluation are separated processes in almost all software projects, they are considered to be lightly related as they both have the same goals. The following explains the relation between two processes.

8.2 System Testing:

System testing is one of the most important stages at all software projects to ensure that the system meets its specifications and is working as properly as expected, and that it avoids any problems and errors.

In e-learning projects, system testing is considered to be very important in checking the efficiency and the effectiveness of the system. It should be taken in to consideration that any error may affect the whole system and consequently any other related errors may appear.

Unit testing is one of the testing types that depend on separating or dividing the system into components to be tested separately to ensure that they are operating correctly and that meet the specifications. Subsystem testing is another testing type that depends on testing the related system components, so it can be tested without other system components. The third testing type is the integration testing which depends on testing all components together as a whole system to ensure that the system works properly and meets the specification.

Integration testing can be divided into alpha testing which may be operated through the system developers or other expert specialists. The second type is Beta testing which is another integration testing operated through common users to whom the system developer can provide a paper including a form of error testing report to be filled by these users in order to check any discovered errors.

Since then, system experts considered this process very important despite of its expensive cost which may be estimated to be about 50% of the whole system cost.

8.2.1 Unit Testing:

The project team starts with testing each unit of the system separately in order to ensure that it meets the specifications and works properly as the following:

- Testing the operation of each button at all system interfaces and other applications.
- Testing the operations of each application links.
- Testing the operation of each multimedia application such as: operation of flashes, demos, videos and VRML.
- Testing the compatibility between the sound and the respective application for example the operation of the sound with its demo and flashes applications.
- Testing the quality of each required sound.

After testing each system unit the team notices that each separated unit works properly.

8.2.2 Subsystem Testing:

In this stage, the system related units and components are tested with each other such as:

- Testing the operation of the whole system (Moodle) when clicking the login link.
- Testing the operation of each application with its related components when clicking the existing buttons or links.
- Testing the operation of each related applications and that they work properly and meet their specifications.

The project team notices that all system units work properly and meet their specifications.

8.2.3 Integration Testing:

8.2.3.1 Alpha Testing:

The test is concluded through both the project team members and some experts specialists, and then the discovered errors corrected in order to ensure that the system works properly and meets the specifications.

8.2.3.2 Beta Testing:

The whole system is tested through some common users with different knowledge and skills, by providing them with a form of report testing to be filled in order to check for any error. After that, the team members solve these errors according to the results of the report.

The project team notices that the system works properly without errors and meets the required specifications.

8.2.4 Acceptance Testing:

This process tests if the system is consistent and compatible with its surrounded environment or not.

At this process, the team tests the following two issues:

a. Functional requirements:

The team tests the system in order to ensure that the system meets its functional requirements such as: allowing the students to learn and download the course content files from the system.

b. Non-functional requirements:

The team tests the system in order to ensure that the system meets its non-functional requirements such as: learnability, portability, flexibility, etc.

8.3 Snapshots:

In this section the project team displays some of the snapshots of both the website and the CD's of the e-learning system as the following:

8.3.1 Moodle site Snapshot:

➤ Some of the user pages

This Snapshot describes the main page of the e-learning unit.



Figure 8.1 Snapshot of the e-learning unit – first Page.

These Snapshots describe the Moodle Home Page and the Login Page.



Figure 8.2 Moodle Home Page

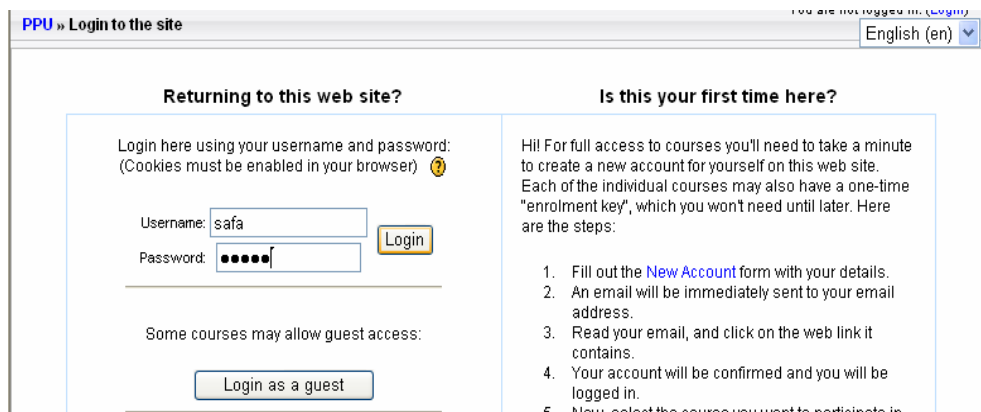
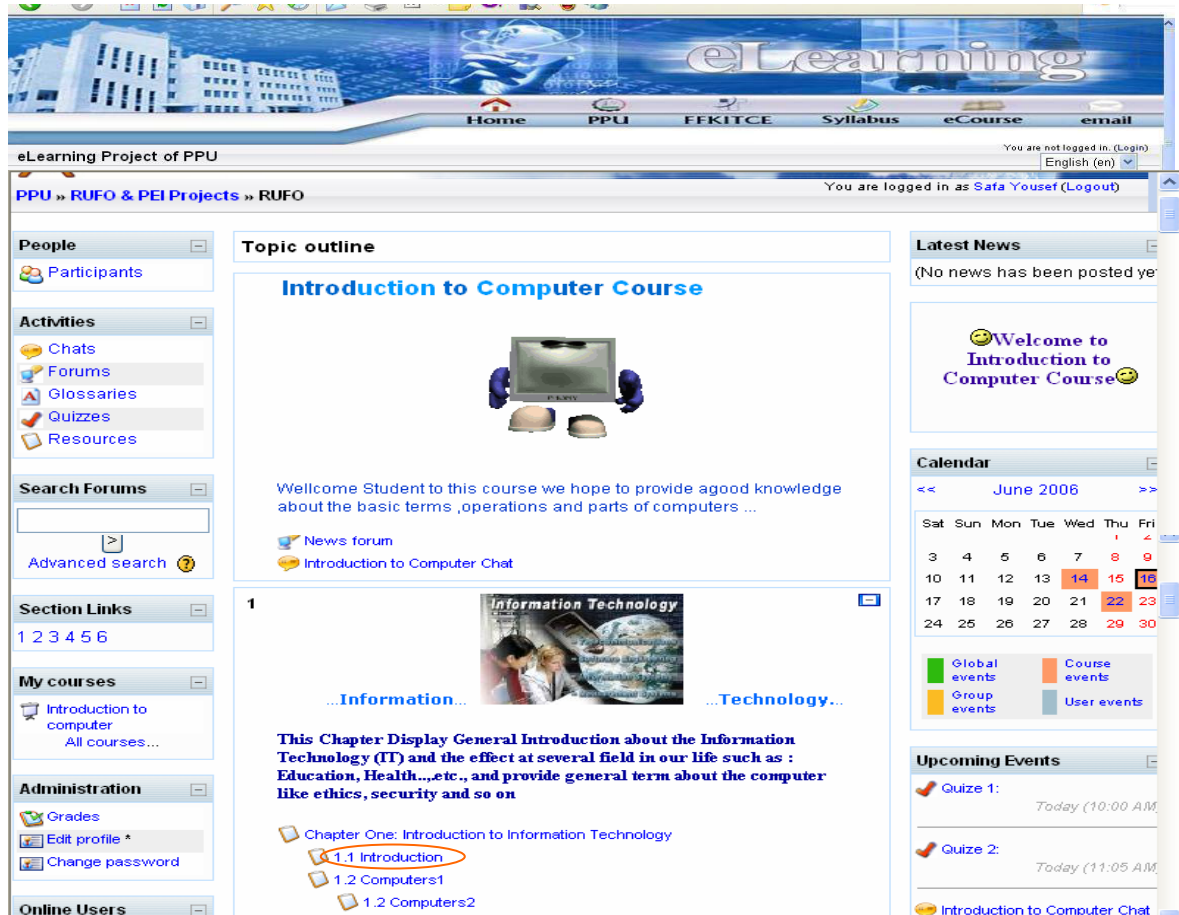


Figure 8.3 Moodle Login Page

This Snapshot describes the Introduction to Computer course Page.



The screenshot displays the 'Introduction to Computer Course' page on the eLearning Project of PPU. The page is structured as follows:

- Navigation:** Home, PPU, FFKITCE, Syllabus, eCourse, email.
- Header:** eLearning Project of PPU. User status: You are not logged in. (Login) / English (en).
- Breadcrumbs:** PPU » RUFO & PEI Projects » RUFO. User status: You are logged in as Safa Yousef (Logout).
- Left Sidebar:**
 - People:** Participants
 - Activities:** Chats, Forums, Glossaries, Quizzes, Resources
 - Search Forums:** Search box, Advanced search
 - Section Links:** 1 2 3 4 5 6
 - My courses:** Introduction to computer, All courses...
 - Administration:** Grades, Edit profile *, Change password
 - Online Users:**
- Main Content Area:**
 - Topic outline:** Introduction to Computer Course
 - Image:** Computer monitor and mouse.
 - Text:** Welcome Student to this course we hope to provide agood knowledge about the basic terms ,operations and parts of computers ...
 - Links:** News forum, Introduction to Computer Chat
 - Section 1:** Information Technology
 - 1.1 Introduction** (circled in red)
 - 1.2 Computers1
 - 1.2 Computers2
- Right Sidebar:**
 - Latest News:** (No news has been posted yet)
 - Calendar:** June 2006. Dates 14, 15, 22, 23 are highlighted.
 - Upcoming Events:**
 - Quiz 1: Today (10:00 AM)
 - Quiz 2: Today (11:05 AM)
 - Introduction to Computer Chat

Figure 8.4 Snapshot of Introduction to Computer course

This Snapshot describes the material web Page of chapter one .

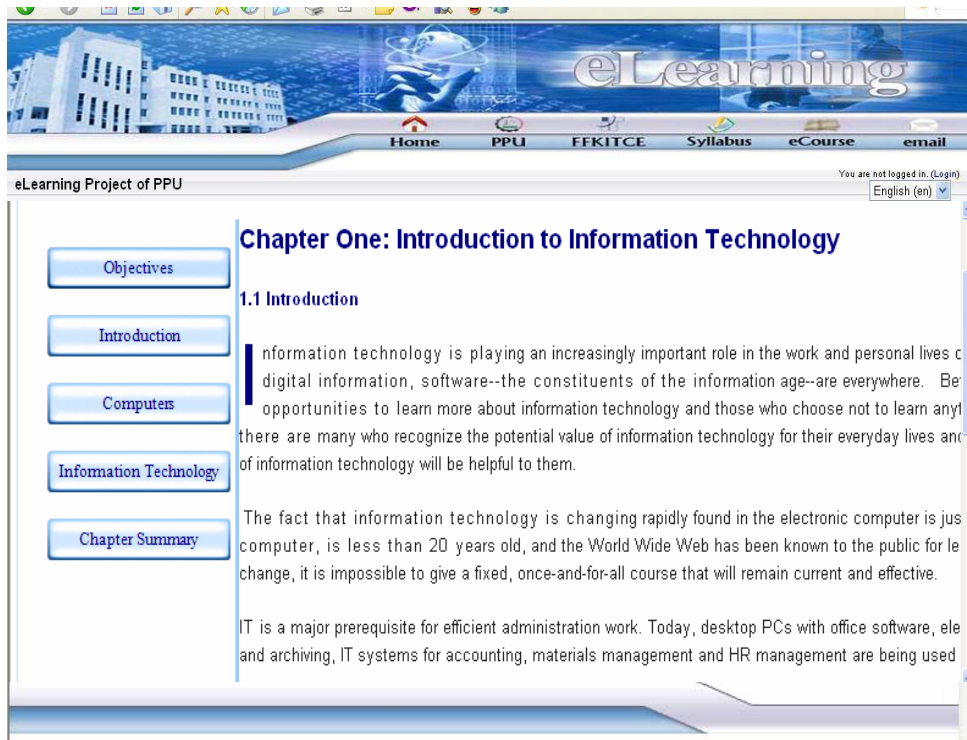


Figure 8.5 Material Web Page.

This Snapshot describes the Chat Room Page.

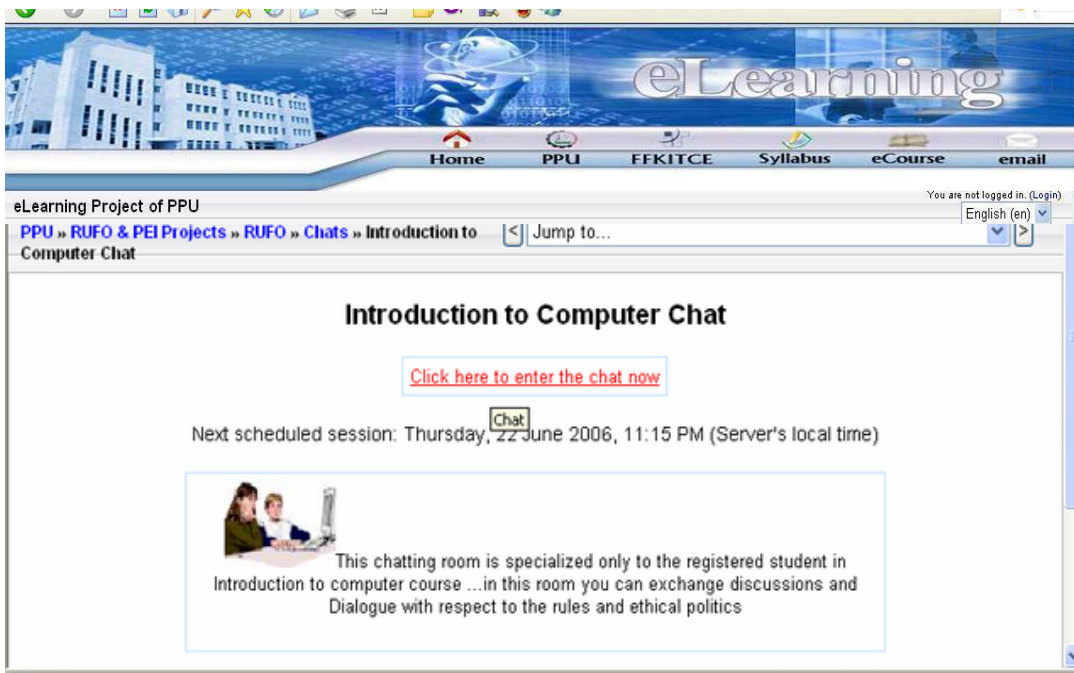


Figure 8.6 Moodle Chat Room Page.

This Snapshot describes the Moodle Glossary Page.

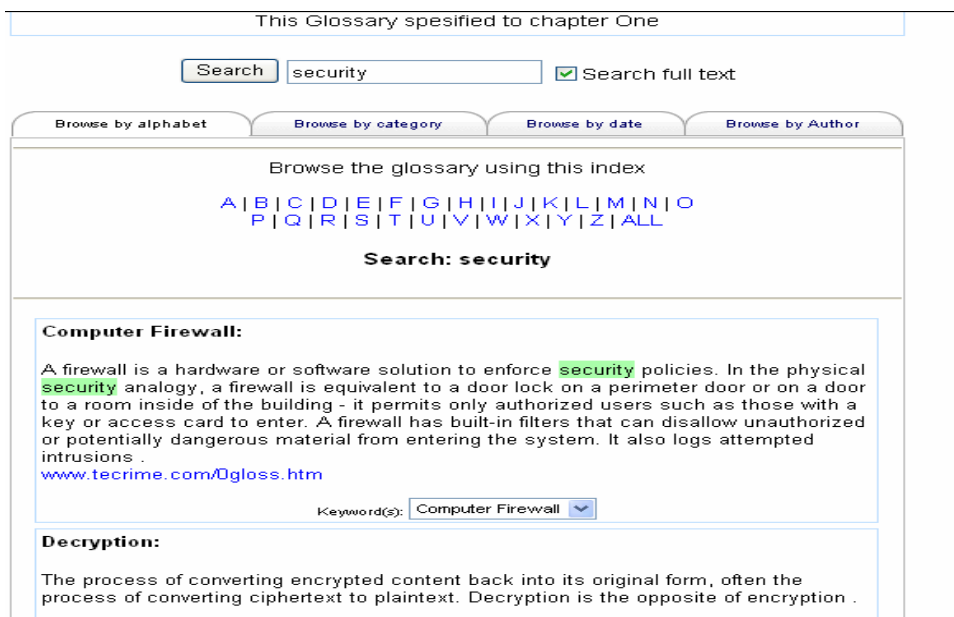


Figure 8.7 Moodle Glossary Page.

This Snapshot describes the Moodle Quiz Page.

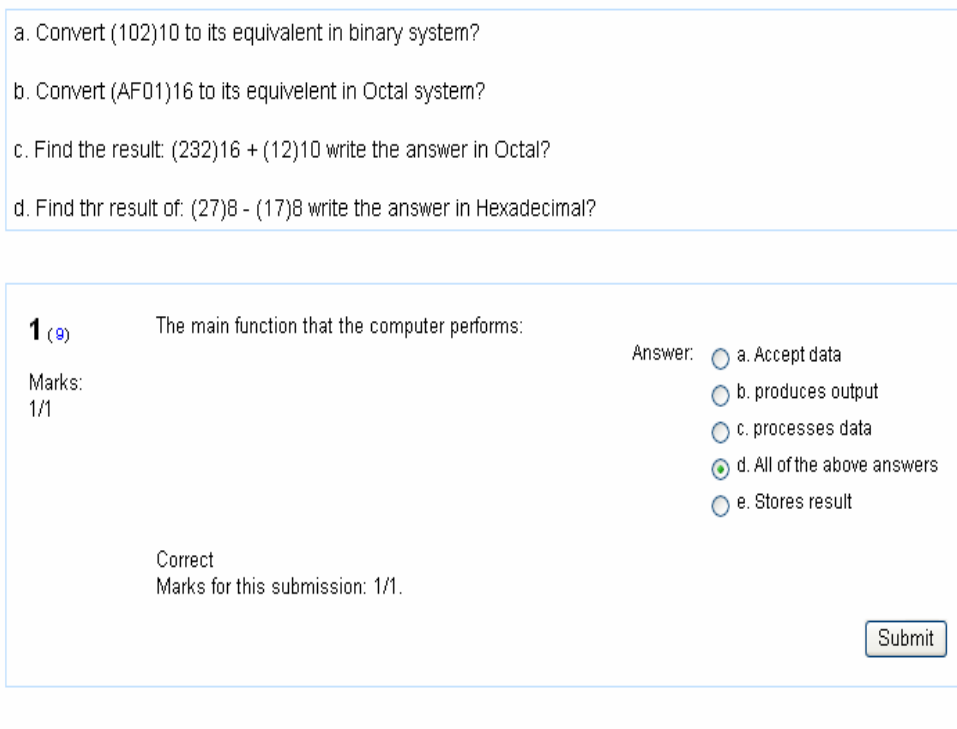


Figure 8.8 Moodle Quiz Page.

8.3.2 CD's Snapshot:

➤ Some of the user pages:

This Snapshot describes the main page.



Figure 8.9 CD's main page

This screen appears when the user clicks on chapter one button



Figure 8.10 Chapter One Screen

This screen appears when the user clicks on chapter two button.

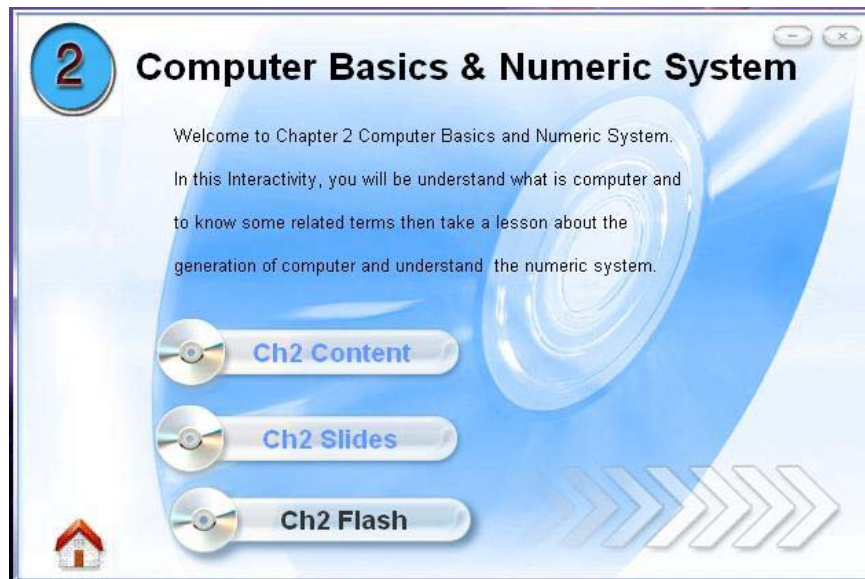


Figure 8.11 Chapter Two Screen

This screen appears when the user clicks on chapter three button.

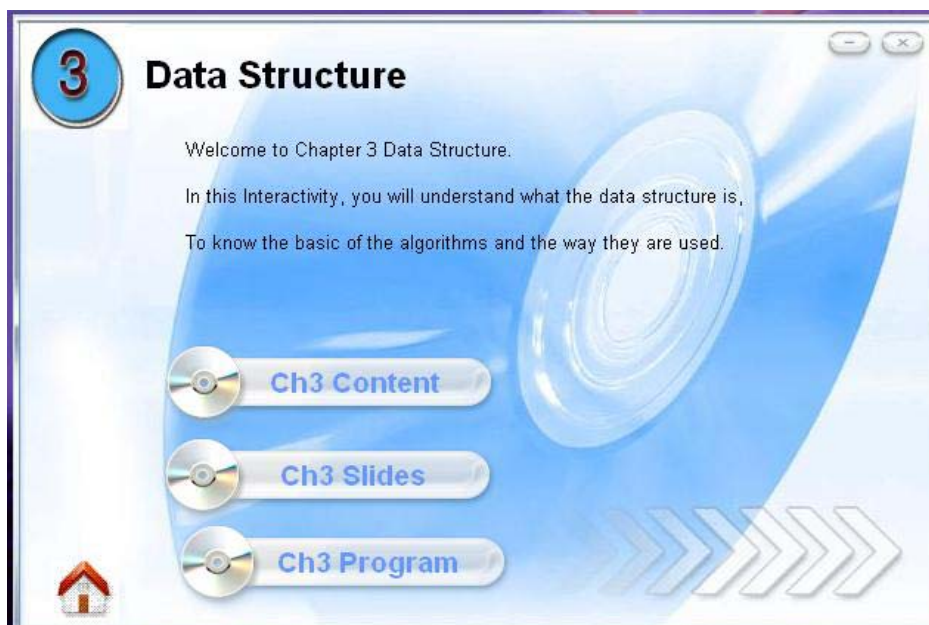


Figure 8.12 Chapter Three Screen.

This screen appears when the user click on chapter four button

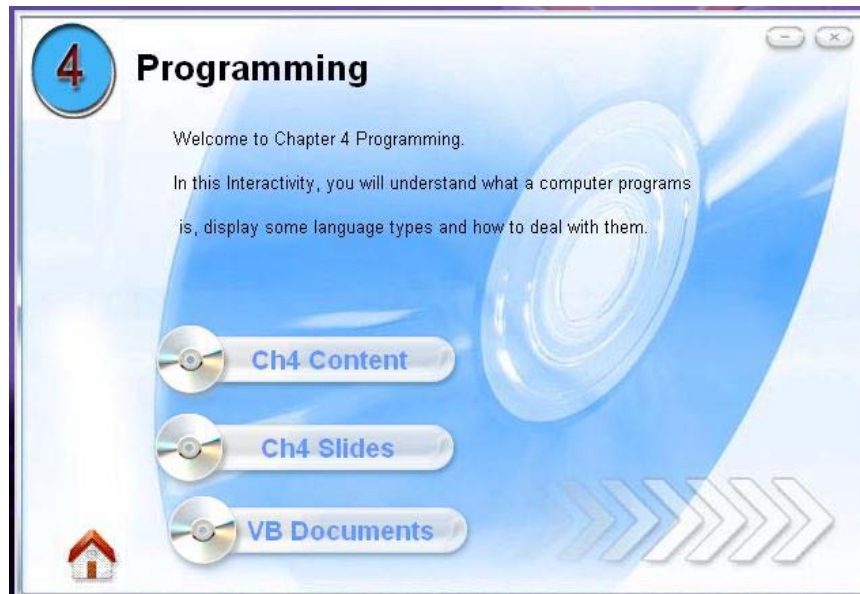


Figure 8.13 Chapter Four Screen

This screen appears when the user click on chapter five button



Figure 8.14 Chapter Five Screen

This screen appears when the user click on chapter six button



Figure 8.15 Chapter Six Screen

8.4 System Evaluation:

The system evaluation can be defined as the process of forcing the system to work through a number of standards that will explore the successfully of the system.

The project team finds that the system implements these standards which can be explored through the system non-functional requirements that achieve the concepts of usability as the following:

- **Learnability:** The system achieves the ease of learn process in that the student can learn the course through the Moodle pages which allow the students to make browsing in an easy way.
- **Portability:** One of the system advantages is that it can be accessible by registered students through the Moodle pages at different locations according to its portable property.
- **Predictability:** The system achieves this property when the user clicks one button, he/she will expect the way of displaying the content in a similar way.
- **Synthesizability:** The user will be sure that each button will operate its specifications successfully.

- **Consistency:** After testing the whole system, the team members ensure that each unit meets the specifications in a consistency way, in that each button, color, action and appearance will be consistent. And the whole system will operate as a consistency unit.
- **Accuracy:** The system achieves this property in that each action is performed accurately in its specific place.

After the system has been implemented, the team ensures that the system achieves the following e-learning purposes:

1. The system achieves the interaction between the user and the interface of the system.
2. The system achieves the ease of use to both user and teacher.
3. The system implements and achieves the SCORM standards such as: the ability of making components and contents reused as it is explained in the background chapter.
4. The system achieves the integrity of conveying the learning information according to the level of the user knowledge and skills.

8.5 Systems Maintenance

Here in this project, the Moodle software support and provides the System Maintenance, so the project team doesn't explain this process as it is available through Moodle software.

Conclusions & Recommendations

- *Introduction.*
- *Conclusions.*
- *Recommendations.*

9.1 Introduction:

This chapter includes the team conclusions, Skills, and Recommendations. These are mentioned as the following:

9.2 Conclusions:

- ✘ Elearning system approves its efficiency as an alternative learning method of the existing traditional learning techniques.
- ✘ Moodle environment approves its effectiveness in covering the learning materials and can simplify the leaning process to both teacher and student sides.
- ✘ It is important to provide teachers and students (users of the system) with guidelines about how to use and deal with the Moodle software.
- ✘ Using multimedia tools can improve the learning process by supporting attractive material explanations.
- ✘ SCORM standards have been implemented on the content of the learning material which allows the system to be implemented in other different operating systems despite of their available standards.
- ✘ There is a need for different persons with different skills from other studying fields such as graphic field in order to support the process of building such e-learning projects.
- ✘ Working in a team has a positive effect on the productivity, which can enhance the work productivity and increases the system effectiveness.
- ✘ Building effective e-learning projects needs more efforts and long time to be completed; this is one of the project risks the team members face while building the project.
- ✘ There is a need for experts at the scope of learning process, standards and procedures to be implemented during the system building in order to achieve the desired goals of the learning process.
- ✘ Local universities has already adopted such e-learning techniques and started their initial stage by developing and improving e-learning units for some courses, and Introduction to Computer course is considered to be the first course converted to an electronic version.

9.2.1 Skills:

- ✘ Working in team.
- ✘ Using and dealing with multimedia programs such as: Macromedia Flash, 3-D Max, Demo, and Photoshop.
- ✘ Using and dealing with software programs such as: Visual Basic.Net 2005, Dreamwaer, Microsoft FrontPage 2oo3, etc.
- ✘ Using and dealing with Moodle software.
- ✘ Searching, gathering and documenting information processes.
- ✘ Getting knowledge related with the course learning contents.
- ✘ Creating such e-learning courses.

9.3 Recommendations:

- ✘ The team recommends to the being graduated students to develop and improve this system by following the content changes depending on the periodically up to date information and used technology.
- ✘ The team recommends to the university to depend on e-learning projects for developing the existing learning units and supporting the students with such e-learning techniques.
- ✘ The team recommends to the university to adapt this e-learning course with its new contents that the team prepared after being reviewed and analyzed by the special experts depending on the university learning standards and polices.
- ✘ The team recommends to the university to convert other courses to be electronic as an alternative of the existing traditional courses.
- ✘ The team recommends to the university to support the students with more requirements and encouragements to motivate them in building such systems in effective way.
- ✘ The team recommends to the university to support the students with e-learning experts persons to motivate, help, and guide them in their work of building such projects.
- ✘ The team recommends to the university to establish a periodic training program for the students in order to provide them with assistance and guidelines about the e-learning term.

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17. www.dempseybus.com/site60.php
18. www.webcamstore.com/consumer/tutorial/glossary.php
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Appendix

المخلص

عند الحديث عن التعليم الالكتروني فإننا غالبا ما نعني التعليم باستخدام تكنولوجيا الويب والمليديا والتكنولوجيا الفعالة لتحسين خيارات التعليم للطلاب في مفهوم وكيفية التعليم.

الهدف الرئيسي من هذا المشروع هو انشاء و تطوير مساق الكتروني بتحقيق معايير وأهداف الـ SCORM و RUFO، لمساق مقدمة في الحاسوب الذي يعتبر من أهم متطلبات الجامعة في جامعة بوليتكنك فلسطين . هذا النظام يمكن المدرس من اضافة ، وحذف، وتعديل محتويات المساق الالكتروني من اجل تحقيق الهدف المنشود اليه وهو توصيل المادة التعليمية الى الطلاب . بالاضافة الى ذلك ، فإن هذا النظام يسمح للطلاب الدخول إلى هذا المساق والقيام ببعض العمليات مثل: عمل تصفح ، وتقديم امتحانات قصيرة، وتحميل ملفات ، والاتصال والتفاعل مع مدرسي المساق وغيرهم من الأشخاص من خلال المنتديات التي يوفرها هذا النظام.

بالإضافة إلى العملية السابقة ، فإن هذا المشروع يهدف إلى انشاء شبكة اتصالات داخلية بين الجامعات في فلسطين من خلال تحقيق معايير وأهداف مشروع الـ RUFO، بالإضافة إلى إنتاج مساق يسهل إعادة استخدامه وتطبيقه على أي بيئة برمجية أخرى من خلال تحقيق معايير وأهداف SCORM.

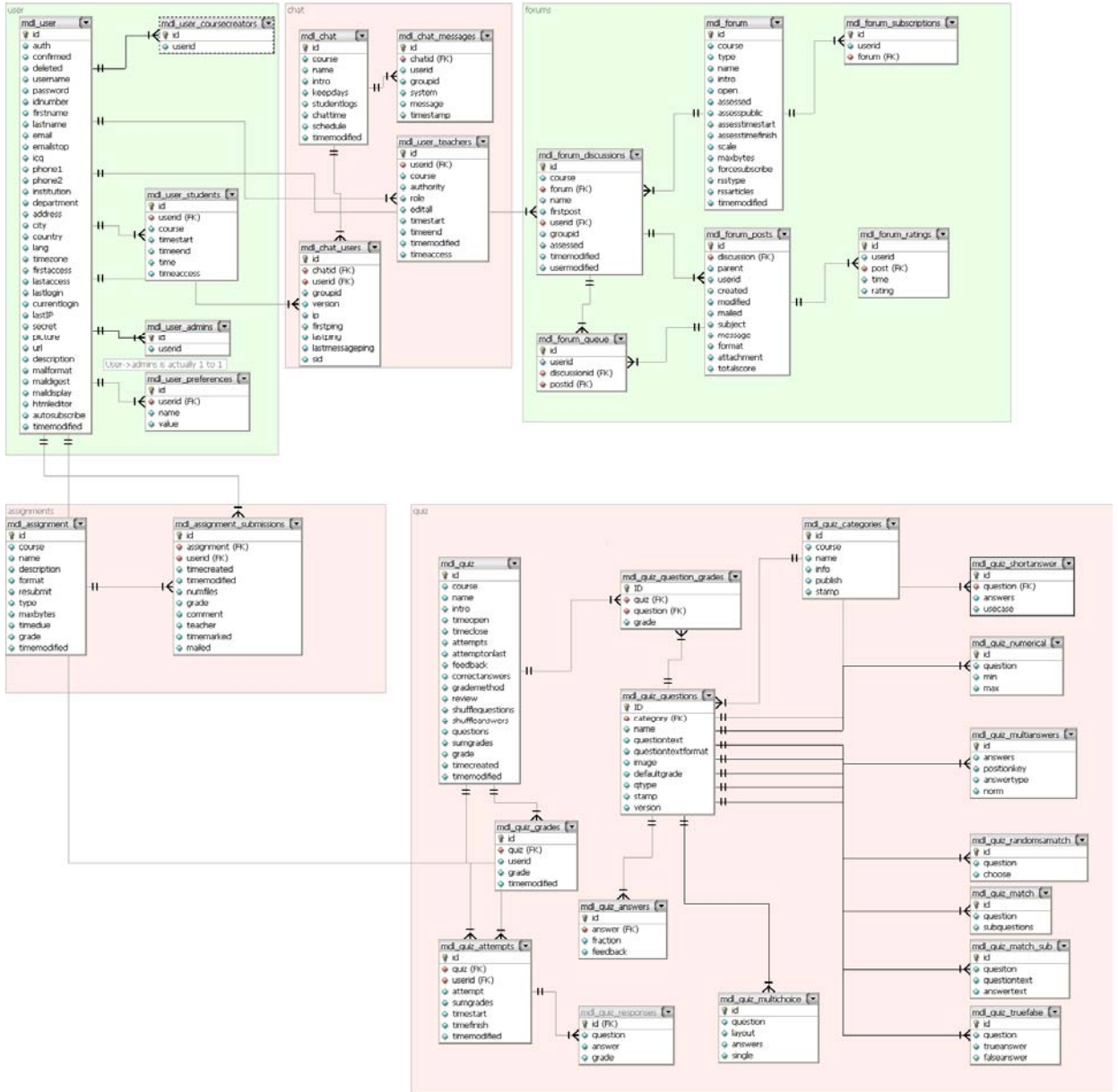
ومع هذا ، يستنتج فريق البحث بأن التعليم الالكتروني ينظر له على أنه مناسب وفعال لإيصال العملية التعليمية إلى الطلاب من خلال المساق الإلكتروني . بالإضافة إلى أنه أثبتت فعاليته في التعليم أكثر من التعليم التقليدي . بالتالي فإن التعليم الالكتروني لديه القدرة على توسيع مهارات التعليم وتسهيل العملية التعليمية على المعلمين والمتعلمين في أي زمان ومكان. لهذا فإن فريق البحث يوصي وبشدة جامعة بوليتكنك فلسطين لتبني وتطوير وتطبيق مثل هذه الانظمة.

Check Error Forms:

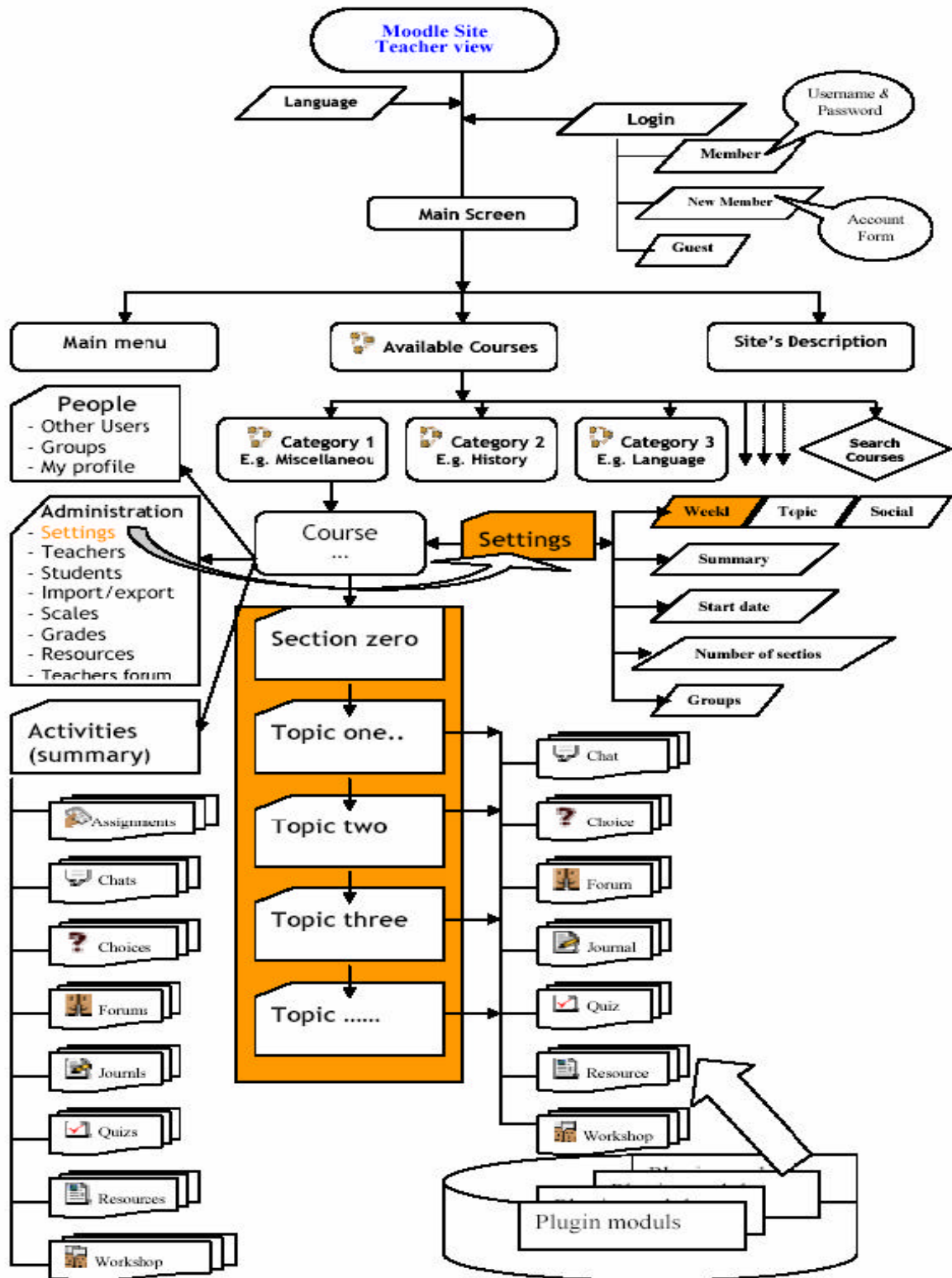
Bug Reporting Form	
Please Fax or mail completed forms to: E-learning Project Team. Palestine Polytechnic University. Palestine, Hebron, Jabal Abu-Ruman St. Phone:2235505 Fax:2217248	Beta program contact: Name: _____ Title: _____ Company: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone no: _____ Fax: _____
System configuration: CPU: _____ Clock speed: _____ MHz Manufacturer: _____ Hard disk capacity: _____ Currently available: _____ RAM: _____ System software: _____ Monitor: _____	
Summary of the problem: _____ _____ _____ _____	
Description of the bug: _____ _____ _____ _____	
Replication steps: If the bug is reproducible, please describe how to do so: _____ _____ _____ _____	

Moodle's Database Relations

An attempt at the Moodle database scheme. It may be inaccurate and I am fairly sure that some links that are indicated as one to many are actually one to one (a peculiarity of the tool used to created it called DBDesigner from fabforce)



Moodle's Teache Flowchart



Questioner

بسم الله الرحمن الرحيم



جامعة بوليتكنك فلسطين
كلية العلوم الإدارية ونظم المعلومات
مشروع التعليم الإلكتروني / مقدمة في الحاسوب

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	<input type="checkbox"/>	<input type="checkbox"/>	.17
	<input type="checkbox"/>	<input type="checkbox"/>	
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			.18
	<input type="checkbox"/>	<input type="checkbox"/>	
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