Web Based Learning System
Teaching Arabic Language for beginners

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I understand that failure to attribute material that is obtained from another source may be considered as plagiarism.

(Signature of student) _______________________________
Summary
This project aimed to develop a Web Based Learning System (WBLS) teaching Arabic language as foreign language according to the users’ requirements.

Overview
This project would start with an introduction that would state the problem and a basic background about the project. After that, a background research will be reviewed discussing the kind of Arabic language and different methodologies that can be used. Also, it will look at WBLS and an outcome of a similar system. After that, users’ requirements are analysed. Then, it will discuss the design of the system after it looks to the implementation tools. Finally, this project would be evaluated.
Acknowledgment

Special Thanks to my partner who supported me all the time, Dr. Lydia for guiding me to the right direction.

Thanks go to those students who helped to find out users requirements. In particular Dr. Latifa, who spent with me a lot of time reviewing the content of the system.

Finally, thanks go to my family who always support me and to my friends who always where with me when I needed them.
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1. Introduction:

1.1 Statement of the problem

It was published in the news group that the Arabic Department in the University of Leeds has a prototype web-based tool to assist in the teaching of elementary Arabic. The project exists in doing this work. However, it needs further development in terms of extensions in various areas, redeveloping the content. It is not essential that the system’s developer should be able to speak Arabic to do this, however an advantage being taken by developer from the ability to speak Arabic language. In addition, the developer of the system believes in having good designing skills.

1.2 Background

After investigation, the owner of the project Dr. Latifa, who teaches Arabic language for beginners, has been met. After that, it becomes visible that this is a private and personal project specifically for Dr. Latifa. It was required by the owner of the project to redevelop the existing system. The plan was to use the existing materials to develop the site. However, after a period of time; the modified requirements have to start from scratch. The reason behind this is to save the existing materials of the web site, which is not published, from being used or copied. Therefore, new materials have to be developed, which was unexpected.

1.3 Project Aim

The aim of this project is to develop a web-based learning system that teaches Arabic language for beginners as a foreign language.
1.4 **Project objectives**

There are certain objectives to accomplish in order to achieve the aim. These objectives intend to be achieved at the end of the project. They are as follows:

1. Find out users’ requirements
2. A comparison of methodologies for the development of Web Based Learning Systems
3. Learn appropriate technologies to implement the solution.
4. Evaluating of the project and the system.

1.5 **Minimum requirements & Deliverables**

The following are the minimum requirements in order to accomplish this project:

1. Find out users’ requirements.
2. Develop a system that would satisfy the essential users’ requirements.

The deliverable consist of two components, they are:

- Web Based Learning System
- Final Report

1.6 **Acceptance Criteria**

In order to evaluate the success of this project, it is necessary to outline the acceptance criteria to address the level of success. These acceptance criteria can be prioritise as:

1. Covering all objectives and minimum requirements.
   
   **Justification:** it is *essential* to meet the objectives and the requirements in order to present a complete solution.

2. Providing a solution in response to the original problem.
   
   **Justification:** the idea of this project is to produce a solution to the original problem. Therefore, building a Web Based Learning System (WBLS) teaching Arabic language for beginners would be *essential* to the problem statement.
3. A written report.

**Justification:** it is *essential* to write a report that would clarify the process and the research of this project. Also, it is *desirable* that the style of writing must avoid unnecessary technicality as businesses want a solution but not interested in complexity of technical information.

4. Interactive solution.

**Justification:** it is *desirable* to build an interactive solution. For example, producing self-evaluation exercises and tests for the students, provides more valuables solution.

### 1.7 Project schedule

The schedule of the project is broken up in terms of time and event as they are shown in Table 1. Milestones for the progress are identified into three phases. Phase 1 consists from reading and writing sections. Phase 2 consists from speaking and listening. Both of the phases include learning materials, self-evaluation and self-testing. Finally, phase 3 is left for the user to decide any further development where appropriate. Phase 1 and 2 are clarified in Figure 3.

### 1.8 Approach

The approach that is going to be used for building the system is Rapid prototyping approach. Choosing this approach came after a comparison between different methodologies explained in detail in section 2.2
<table>
<thead>
<tr>
<th>Event</th>
<th>November</th>
<th>December</th>
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<td>1.4 Users requirements</td>
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<td>2.3 Reporting the outcomes of similar projects (write up)</td>
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<td>3.2 Develop (phase 2)</td>
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<td>4.2 Self website testing &amp; evaluation</td>
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<td>Catch up any of the above stages</td>
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<td>4.3 Teacher and students and ACOM evaluation</td>
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<td>Writing up the final report</td>
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**Table 1: Project Schedule**
2. **Background work**

2.1 **Background about Arabic Language**

Arabic language is spoken in over twenty two countries from north-west Africa to the Arabian Gulf by almost 200m people, which make it the widely used language in the world, as it is the language of Quran, the holy book of Islam, and all Muslims over the entire world. This is one reason why many people seek to learn Arabic. It is hard to say whether Arabic is difficult language or not. However, it is less complicated than Latin and there are no many irregularities in the grammar (The Arab world, last access 16/4/03)

There are different kinds of Arabic that are written and spoken. These fall into three main categories:

- **Classical Standard**: this is the language of the Quran and classical literature. Its structure is similar to modern standard but the style and most of the vocabulary is in Arabic.
- **Modern standard**: this is a universal spoken language. Almost all written materials is in modern standard as well as formal TV programmes
- **Local dialects**: these are the spoken languages of different regions of Arab world. These languages vary. For example, Egyptian people might have difficulty understanding Moroccan even if they speak the same language.

In this project, Modern standard Arabic has been chosen. This is because it is universally understood as well as the media uses it. For those who would like to learn Classical Standard, it is easier to begin with studying Modern standard first.
2.2 Methodologies

This section is going to define prototyping model followed by types of prototyping techniques

2.2.1 Waterfall methodology

In software engineering, the waterfall model describes a development method that is linear and sequential. Waterfall development has distinct goals for each phase of development. Imagine a waterfall on the cliff of a steep mountain. Once the water has flowed over the edge of the cliff and has begun its journey down the side of the mountain, it cannot turn back. It is the same with waterfall development. Once a phase of development is completed, the development proceeds to the next phase and there is no turning back.

The advantage of waterfall development is that it allows managerial control. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process like a car in a carwash, and theoretically, be delivered on time. Development moves from concept, through design, implementation, testing, installation, troubleshooting, and ends up at operation and maintenance. (SearchVB.com, July, 2001)

2.2.2 Rapid Application Development

Rapid Application Development or RAD is a new (highly interactive) systems development approach whereby qualitatively better systems can be realised in a shorter working less time and at lowers cost compared to the traditional one.

2.2.3 Dynamic System Develop Method (DSDM)

DSDM, figure1, is a framework and set standards for the RAD approach to system development. It provides a framework of controls for building and maintaining systems, which meet tight time, constrains and provide a recipe for repeatable RAD success. Its aim is to build elements of a system quickly. From (Martin, 1991) Shows DSDM life cycle consisting from the following stages:
- Feasibility study: there is a possibility of producing a WBLS teaching Arabic language for beginners. This project is a non-profit project. From human resources prospective, there is only one person involved and that’s is the system developer. However, this person will be reviewed by the supervisor who is having regular meetings in order to ensure that the system builder is in the right track. Also, a regular consultation with an Arabic teacher so as to review the materials being used and developed. This is to say that the resources of this project are fixed as well as the time, which is the project deadline.

- Business Study: There are some resources that should be available to build this system such as, the implementation tools that are going to be used. The measurement of success will be the effectiveness of meeting the users’ requirements.

- Functional Model Iteration: The schedule of system (Table 1) and the design of website structure see website structure section 5.2; have been agreed to by the owner of the project Dr. Latifa. The Aim and the objectives of this project are clearly identified in the Introduction.

- Design and Build Iteration: it will be ensured that the system is sufficiently on a high quality to be placed in the hands of users by testing it after building each phase.

- Implementation: this is the final stage where tested system is being implemented and users are trained how to use the system.

![Figure 1 DSDM](image)
2.2.4 Rapid prototype

It is Iterative approach in which the final design is not well understood. In other words, what users ask may not be what they want and what they want may not be what they need. Therefore, the prototyping techniques enable better communication between users and system analyst as well as a good clarification of users requirements. Moreover, learning can be gained by analysing on implementation issues. For Example, learning java scripts for Exercises evaluation. This approach is fast and flexible in terms of development process. This is a good advantage for the system developer, who is a student and face course works quite regularly, which will give flexibility in working. The process of Rapid prototyping is clarified in (figure 2) from (Jim Cabral, 2001)

From the developer’s point of view, the only disadvantage of this approach is the time wasted on redeveloping the system and modifying it. The developer might spent time in developing a part of the system, which might not be useful for the learners and hence a modification or new ideas have to take place.

2.2.5 Chosen Methodology

Due to the nature of the waterfall methodology, it requires that all the requirements be specified up front, in the first phase before any further production can be done. This methodology is difficult to deal with in this project due to the previous reason. For
example phase 3 of the website structure has been left for the users’ decision as to where further developments are needed.

It is believed in such a case, Rapid prototyping approach is suitable due to the flexibility and uncertainty of users’ requirements. Developing the system in three phases will allow reviewing, testing and evaluating the system, which strongly helps the users to change the requirements easily. This might be hazard for the system developer but it will increase the possibility of producing a good system that will satisfy the users, who are mostly students.
2.3 A Web Based Learning System

The use of computers and communication technologies in learning appeared before 1970. During that time, it has been called by many names including Computer mediated communication (COC), online learning, Internet based learning. The advent of the web provides a new form of Distance learning. A web-based learning system is a system created on the World Wide Web in which students and instructor can perform learning related tasks. (McCormack Jones, 1998) this includes tasks related to communication and students assessments. The tools that provide the functionality of the web have little to do with the web. These tools are examined in more detail in Implementation tools section.

2.3.1 Problems of WBLS

It is hard to say that WBLS can be a solution to all problems that maybe faced in traditional learning due to a number of limitations. These problems are clarified as follows:

- **Access and Resources**: before a WBLS can hope to succeed, it must have students who are able to access computers and the web. specially in the 3rd world countries where it is more difficult to have internet access and the use of bandwidth is not available in some countries like Oman, which make the use of WBLS is slow and therefore, the user might find it boring. The limitation of Internet browser can prevent the learner from better view to the WBLS due to the version and the type of the browser. For example, Netscape navigator is not compatible with Arabic language.

- **Training**: although the use of the web is becoming widespread, many students may have required a minimum level of computer knowledge. Specifically, enough knowledge in computer and the Internet to function the WBLS. In strongly speaking this depend on how complex is the system.

- **Cost**: On campus, students have a free access to the Internet as many commercial companies’ employees do. However, there are some students who cannot afford buying the technology. This may include computer, Internet connection, or perhaps the system if it is not for free.
o **Student behaviour:** Generally, in order to successfully participate in an online program, students must be well organised, self motivated, and possess a high degree of time management skills in order to keep up with self-learning or else students may find themselves overloaded with too much information.

### 2.3.2 Benefits of WBLS

As there are some limitations of any WBLS, there are some benefits to the learners and the instructors at the same time. These benefits are as follows:

- **Better teaching techniques:** this is considered as the greatest benefits of web based learning system occur via a pedagogy that effectively employ technology to maximise the quality of learning experience. For example, the use of animation to write a later and the use of audio for learning pronunciation as well as the facility to hear or reload again.

- **Flexibility:** WBLS does not only enable the learner to choose where and when to learn but also allow learners to take their time answering the questions,. Most say that students learn better where they have time to think before speaking or writing (Silva Karayan and Judith Crowe, 1997)

- **Travel less:** instructors do not have to travel to remote sites to conduct teaching. This would allow spending more time on planning and producing more enjoyable materials.

- **Course content:** instructors can add to the course pack as the course progress. They can do this anywhere and anytime. Instructors can more quickly respond to changes in subject matter. Moreover, the course content can be kept up to date with minimal cost. For example, there are no prints

### 2.3.3 Summary

Web Based learning system can be a good means of providing an education. However, it may not be as effective of face-to-face communication, which allows better communication. “The quality of face-to-face discussion is higher than that of electronically conducted discussions.”
2.4 Outcomes from a similar approach

2.4.1 Introduction
OGGI E DOMANI is one of the best web Based learning system that teach Italian language. This WBLS has been chosen because the author used to learn Italian language, which will create the feeling of a learner and therefore would help to

((OGGI E DOMANI)
http://academic.brooklyn.cuny.edu/modlang/carasi/site/lessons/lesson01/lesson1-page1.html

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Using different voice format</td>
<td>1. Wave format take a huge size plus it take long time to be played.</td>
</tr>
<tr>
<td>2. Use of Help: Instruction of self-</td>
<td>2. No Introduction stating the objectives of this course.</td>
</tr>
<tr>
<td>pronunciation assessment.</td>
<td></td>
</tr>
<tr>
<td>3. Alternative INTERACTIVE EXERCISES are</td>
<td>3. Unavailability of FAQ page despite the site is huge.</td>
</tr>
<tr>
<td>good but see comment one.</td>
<td></td>
</tr>
<tr>
<td>4. Clustering items, all interactive</td>
<td>4. Many links are not activated.</td>
</tr>
<tr>
<td>exercises in green. All grammar</td>
<td>5. Printing facility cloud be good for some exercises in case, student prefer to do them at home however, its believed by some people online courses meant to be interactive.</td>
</tr>
<tr>
<td>explanations in yellow.</td>
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<tr>
<td>5. Motivation method has been used for</td>
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<td>example offering half of the answer.</td>
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Table 2: Pros and Cons of a similar system
understand students’ requirements. This site has been analysed in term of Pros and Cons in table 2

2.4.2 Conclusion:
Generally speaking this is a good WBLS. However, there are some issues that need to be considered and cannot be compared with maybe other WBLSs such as OGGI E DOMANI. For example, the writing in Arabic is not possible. Simply just because the unavailability of Arabic keyboard. This could be sorted out by providing a web-based keyboard like in http://www.almisbar.com/dict_page.html, which enables you to write in Arabic. However, there are limitations of this keyboard. For instance, you cannot write to fast, which demotivate you to carry on. More than that it would enable you to write in one place, which does not give you flexibility in writing.

It is very important for the Web Based Learning System to have an introduction page that would clarify the aim of the course and its objectives and a Frequently Asked Question (FAQ), which the student can return to in case s/he has any problem.
3. Users’ requirements:

This chapter is going to discuss the users’ requirements methods briefly; presenting their benefits and limitations from (Simon Bennett, Steve McRobb and Ray Farmer, 2001) and to find out the best methods that can be employed in gathering users’ requirements. Finally, it would draw a conclusion after a discussion on users’ requirements in terms of students’ and teachers’ own perspectives.

3.1 Gathering Information Methods

The aim of developing a web-based learning system teaching Arabic language is to produce something that meets the needs of users who are learning Arabic at a beginner’s level. In order to achieve this, it is important to have a clear understanding of the overall users’ objectives in using the web-based learning system. Therefore, it is important to capture the user’s own expectations of the web-based learning system, to know what students and teachers expect from the website and how the new system can benefit them most. There are a wide variety of information-gathering techniques. These techniques are sometimes referred to as SQIRO – Sampling, Questionnaires, Interviewing, Reading and Observation (Simon Bennett, Steve McRobb and Ray Farmer, 2001)

3.1.1 Document Sampling

Generally, there are two different ways of how document Sampling can be used. Both of them have been used. The First way, the analyst collects handouts from a student. These documents or exercises are used to determine the information that is used by students in their course. The second way, the analyst carries out a statistical analysis of documents in order to find out about patterns of data. For example, the analyst may want to estimate the volume of data to be held in each exercise such as the size of the exercise.

The first type of document sampling, which is being used, is appropriate because it gives an idea of what is happening in the current traditional teaching system. Therefore, after evaluating student handouts, it is true to say that the teacher focuses
more in writing materials. This evaluation has been supported by a student in an interview (Khalid, 2 - 2003).

Also, the first type of document sampling is a supporting evidence for the information gathered from interviews. The Statistical approach, the second approach, has been used only to find out the size of exercises that students do more often.

However, it is believed that these existing documents may not reflect how it will turn up in future. For example, teaching techniques and students tests might change within the next few years due to introduction of new technologies.

3.1.2 Questionnaire:

“A written list of questions that a number of people are asked to complete so that information can be collected” (Cambridge dictionary). This method mostly use close questions that requires limited answers such as YES/NO or multiple choices questions to minimize time consumption. Questionnaire may include open-ended questions that do not have any fixed number of choices.

This method has not been used to find out users’ requirements because I believe that what I need is qualitative information to develop the system. While questionnaire is good in finding out quantitative data. However, this method will be used to evaluate the website and therefore will be discussed in more detail in the evaluation section.

3.1.3 Interviewing:

Asking a person serious questions in a formal situation in order to obtain in depth information. It is the most widely used method in gathering information due to the ability to respond flexibly to the interviewee’s responses. Therefore, this method has been used with students and a teacher. But because interviewing requires conversational skills, which I believe I am poor at, interview guidelines and prepared questions were at hand to improve the quality of the interview.
On one hand, Interview can produce a high quality of information because of the personal contact that allows the analyst to be responsive and adapt to what the user says. Moreover, the analyst can focus in greater depth about any areas under discussion. On the other hand, if the interviewee has nothing to say, the interview can be terminated. Also, interviews are time consuming and can be the most costly form of fact finding technique and difficult to implement. For example, there are other three interviews that were planned for but has not been implemented due to the poor co-operation from students and teachers. In addition, if different interviewee provides conflicting information, it can be very hard to analyse, for example, an interviewee say pronunciation is very important and later on listening becomes more important.

Generally, Interviews are appropriate in most projects because they can provide in depth information about users’ requirements of the new system.

3.1.4 Reading:
Reading about teaching and learning strategy is more likely to help the analyst to understand users’ requirements and their objectives. The kind of documents that are suitable sources of information include documents in teaching and learning at beginners level and learning language in a web based learning system. Therefore, the recommended book by teachers for beginners level which is called “the book, in teaching Arabic” and “Alif ba ta” has been looked at which helps the analyst to understand users’ requirements and to use some of the materials in developing the system. Moreover, It helps to prepare for other types of fact finding techniques. However, written materials might be out of date.

3.1.5 Observation
Watching people carrying out their work in a normal setting can provide the analyst with better understanding about users’ activities, in a classroom, for example. This allows the analyst to see what activities the students carry out to achieve their objectives.
The advantages of this method are as follows; first, it provides firsthand experience of the current traditional system or other similar web based systems operations. Second, data are collected are up to date. Third, data about the performance of similar web based learning systems performance can be collected, which is clarified in detail in the outcome of similar approaches section. Nevertheless, most people do not like to be observed and are more likely to act differently from the way they normally behave. Observation also requires training and observation skills. Also, there might be ethical issues. Observation is appropriate for gathering quantitative data.

3.2 **Chosen Methods**

Because finding out users’ requirements require explanation and reasoning, I believe that an interview would be a good method to use. Samples of students will be interviewed in a couple of sessions if necessary. The outcome of an interview in the following section is for one student in one session. The questions for the second session will be based on the first interview. In terms of evaluating the website by students and teachers, I believe that it is better to produce a questionnaire which is time effective since there are a high number of students who might be involved in the Evaluation. Reading the recommended book was useful too. However, a particular interview with the teachers will take place to find out what improvements can be made to the website.

3.3 **Students requirements**

An interview took place with two Arabic learners at a beginner’s level to find out users’ requirements of the system. The outcomes of this interview are as follows. First and foremost, it has been found out that one of the reasons why students want to learn Arabic is due to curiosity as to why Arabic is known as one of the most difficult language to learn and therefore sees it as a challenge. While the other student is learning Arabic because he is a Muslim and it will enable him to read the holy book and know more about his current religion. A difficulty that the student encounter is the fact that being a non-Arabic speaking person and therefore found out that it is twice as hard to learn how to speak Arabic compared to learning to speak other
languages such as Spanish or French. Thus, it is hard to learn speaking, reading and writing Arabic all at the same time. It was suggested by a student that it is best for beginners to concentrate more on conversational Arabic first before going further to reading and writing. The idea of a web-based learning system that teaches Arabic language was supported by the student because she believes that nowadays, it is easier to gain access to a computer or surfing the net. In addition, it is believed that surfing the web or going online is faster than navigating books in the library.

After explaining as to what the users’ requirement is all about, the student stated that the website should be user-friendly, meaning that it should be simple and contains easy to follow instructions and that simple words should be used for easy understanding. Also, it should contain conversational, reading and writing Arabic. However, it should concentrate more in conversational Arabic because the student believed that reading and writing Arabic is more advanced. Finally, the importance of adding the right level of teaching materials for beginners was also mentioned.

3.4 **Teachers requirements:**

On one hand, the main teacher functional requirements is to teach basic Arabic that would include Reading, listening, speaking and writing. Producing a feedback is an important functionality because there is no other guide that would tell the student if S/he is in the right direction of learning. This functionality would give a self-evaluation feature.

On the other hand, the non functionality requirements are those of which concerns on how well the system provides its functional requirements, such as from the interview as to how well is the website structure. It is agreed from the interview that the website structure would be into three different phases, which are reading & writing, listening & speaking and finally others. Introducing all aspects separately will give the students choices. However, the website should focus more in pronunciation as it is very difficult sometimes for some student to pronounce the alphabet; and writing, because it is very different from English language. For example, in Arabic, you start writing from right to left while in English, you start from left to right as well as joining the alphabet, as what DR. Latifa mentioned. It does not matter what type of exercises is
used as long as the exercise is suitable for beginners’ level. Therefore, with regards to this issue, she advised me to see the recommended book and use its materials, which she will check after the development.

3.4 Summary

There is an obvious conflict of the information that I received regarding which category of learning is important at this stage. After consulting with DR. Latifa, I have decided to place importance to all categories of learning giving the students free access to choose the category that suits them best, to resolve this problem. However, most of the users agreed on how important the feedback feature will be for the system.
4. Implementation tools:

To achieve the aim of building a Web Based Learning System, there are certain objectives that need to be achieved; one of these objectives is learning IT tools that will enable developing the WBLS. There are some tools that maybe would be learned. However they wouldn’t be used maybe because its not suitable or not easy to use.

4.1 DreamweaverMX

DreamweaverMX is sophisticated visual HTML editor with powerful site-management features as it supports XHTML and other Website standards. The MX version now includes all the technology previously known as ColdFusion 5.0 and HomeSite 5.

The developer thinks that dwMX is one of the best HTML editors as the developer has used it previously. This opinion is supported by website awarding companies as one of the best web development tool (Macromedia, 6/12/02). However, dwMX is not compatible with Arabic language. This is a major disadvantage of this tool since the website teaches Arabic language there will be a content in Arabic language. However, FireworksMX lets you export your HTML code using the encoding attribute called UTF-8 (Universal Character Set Transformation Format-8). This means that you can display Arabic and any other languages on the same HTML page (Macromedia, 10/12/02)

There are many advantages and disadvantages, gathered from (Macromedia, 6/12/02) and (Kathy Davis, 6/12/02) of DWMX as table 3 shows.
### DreamweaverMX

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean HTML Code</td>
<td>Complicated at first look</td>
</tr>
<tr>
<td>Many tutorials available</td>
<td></td>
</tr>
<tr>
<td>Easy to use as most users think</td>
<td>High cost</td>
</tr>
<tr>
<td>You can customize the toolbar to fit your needs.</td>
<td></td>
</tr>
<tr>
<td>It has multilingual authoring. This means that the creator may use one program to create a website using many different languages.</td>
<td></td>
</tr>
<tr>
<td>You can follow the process of web-site development using Revert command</td>
<td></td>
</tr>
<tr>
<td>It supports more coding languages</td>
<td></td>
</tr>
<tr>
<td>It allows flexibility. E.g. use of frames</td>
<td>Despite saving frames, layers, and pages in the same folder the site does not always look the same online as it did in the preview in explore</td>
</tr>
<tr>
<td>Very user friendly: Inserting Flash, firework,</td>
<td>Hyperlinks do not seem to be updated automatically when the files are uploaded</td>
</tr>
<tr>
<td>PHP and ASP,.NET, JSP, XML, XHTML, CFML and RDS are fully-supported languages.</td>
<td>It is not compatible with Arabic. Maybe with other languages too</td>
</tr>
</tbody>
</table>

Table 3 Pros and Cons pf Dreamweaver mx

#### 4.2 FlashMX

In my opinion, flash is effective software that will help to design the writing page in phase 2. Specifically, in my imagination, it can show the user how alphabets can be written. Table 3 show the advantages and disadvantages of flash, constructed from (joen’s Flash study, 6/12.02) and (John Reuben, 6/12/02)
<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>It delivers motion, sound, beautiful interactive graphics.</td>
<td>It consumes time that would be better spent enhancing a site's core value.</td>
</tr>
<tr>
<td>It let the users at the beginning to see animation as a rest instead waiting for waiting file downloads</td>
<td>You have to be a good designer and to have a good test</td>
</tr>
<tr>
<td>Flash is free software that enhances your internet browser.</td>
<td>It doesn't come with every browser by default, so you may have to download and install it; a process that is very annoying to some people, and tends to scare some away.</td>
</tr>
<tr>
<td>Flash is available for most of the platforms available: Windows, Macintosh and Linux.</td>
<td>Long loading time</td>
</tr>
<tr>
<td>It is difficult for someone to &quot;steal&quot; your source code when your site is done in flash</td>
<td>Hard to learn</td>
</tr>
<tr>
<td>Free on-line tutorials</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Pros and Cons of Flash

Flash effectively conveys the vision on the Web, and seven of the top ten visited sites on the Internet deploy Macromedia Flash authored content. In general, the main problem with flash is time loading. However, the flasher of the project think this is not a problem since it will be used for one web page only related to the Writing section.

### 4.3 HTML:

Hyper Text Mark-up Language (HTML) is a computer language used to create web pages. Therefore, it is true to say that WebPages are HTML documents consisting of Text and HTML tags. The tags job is to tell the Browser about the structure and formatting of a web page. Each tag, a command that is in angle brackets, gives a specific instruction. Many tags have attributes offering options for the tag. For
example, the `<font>` tag has a colour and size attributes that would allow changing the
text colour and its size. (Elizabeth Castro 2000)

A web page may not look the same when displayed in different web browsers because
each web browser may interpret HTML tags differently and many browsers do not
support all features of HTML. For example, Netscape does not support UTF-8
encoding. Therefore, it is not compatible with Arabic language while it is with
Internet explorer. There are several versions of HTML released every few years by an
organisation called Wide Web Consortium (W3C). (Elizabeth Castro, 2003)

### 4.4 JavaScript

“JavaScript is scripting language that enables you to embed programming commands
into your WebPages”. (Nigel Ford, 1998). It is the most popular client-based web
scripting language because it is supported by both Internet Explorer and Netscape
Navigator without adding any additional tools. Java script enables the web page
creator to do dynamically control the web page elements and to change web page
elements as the user interacts with it. for example, you can set the text displayed in a
form’s text to update when the user clicks a button. The different between Java and
JavaScript is that “Java is a powerful program. JavaScript is a scripting language
designed for smaller application interacting more directly with HTML than does
Java”(Nigel Ford, 1998).

### 4.5 Video Edit Magic 1.5

Video Edit Magic software considered to be a complete editing tool, which is easy to
learn and easy to use at the same time. It is the fastest video editing software that
allows you to edit, cut, copy, paste and trim your audio and video files. It work with
all popular video and audio file formats. This software can capture videos using any
input device such as web cam, add some effects. For example adding text to the video,
change the duration of the video. However the main reason of using this tool is edit
Video For Window .avi format and save it as Windows Media Video .wmv to save
more than half of the existing file size.
4.6 Streambox Ripper

This software converts audio files, to convert to and from any of the supported file formats (RealAudio WINAMP (MP3) and Windows Media Audio (WMA) and WAV) from any originating format. Audio (WMA). The reason why I chose this software is to convert .wav format to MP3. there are many programs can do this job. However, the reason why I specifically chose this software is because it can convert many files together in one go, which would save a lot time as well as it is small software as it is easy to use.

4.7 Animation shop 3

The reason why Animation shop to be used instead Flash that’s it is one of the easiest animation software that I have ever used and extremely easy to learn. More than that, it does the required job. The main thing interest me about Animation shop, that you can save your output in to many formats including graphic format: CompuServ Graphic Interchange .gif and a video format: Video For Window .avi, which are completely two different formats.

4.8 Paint

Paint is small software that is available with every windows Package. This software mainly has been used to Edit the images and save them in any format required as it gives many options as well as to adding Text to Images.

4.9 Soundpix Sampler.

This software enables you to add audio file to an image. So when the image and the audio can be lunched together at the same time. This software is chosen to develop speaking and writing section, where an album JavaScript has been used. The plan was that an audio file attach with the image, in order when the user click next and the image change, the user can hear the conversation at the same time. Lately, it is found that because the software that is used is a trial version, it does not include this feature-saving the sound with an image as a JPEG file. This have strongly affected my plan and I had to put the audio file in another HTML page as a substitution.
5. **Design**

This section is going to discuss the design of the system. Therefore, it will start with the development’s approach. Then, it will review the website structure how it was and how it is now.

5.1 **The approach**

The basic idea of the approach is to build a system according to users’ requirements. Rapid prototyping has been chosen for the following reasons:

- *Most of the past failed systems are due to misunderstanding users’ requirements:* Sometimes it is too hard for the people who ask for a system to understand IS/IT people and verse via, which would create wrong information into the analyst head and therefore the analyst might fail to spot some important information and hence fail to satisfy the users.

- *Users’ awareness of IT/IS:* the lack of understanding of what IT/IS can do and cannot do, can limit the users’ requirements or lead them to ask about a similar system owned by other people. In addition, the system can be developed with having many options, for example, the use of flash or HTML each option may have sub options. For instance, in the first meeting, DR Latifa was highly demanding a prototype that utilise sound and pictures. However, after understanding different options that can be implemented, her requirements appeared to change from time to time.

*Timing:* interviewing the volunteers came into different times and have been done into different sessions.

Any of the above reasons may require the developer to redesign and redevelop the system at any stage as figure 2 illustrates. This had a strong in changing the website structure from figure 3 to figure 4, see section 5.2.

5.2 **Website structure**

Website structure has changed several times as understanding the requirements improve and become clearer from time to time. Figure 3 shows the first website structure which has 3 phases and figure shows the final website structure. Figure 4, which have 3 phases too.
Figure 3: The first web site structure
Figure 4: the new website structure
From the changes in the website structure, it is very noticeable that there have been some changes in the requirements. The first important change is mixing reading with writing and listening with speaking, as it is believe from teaching point of view that it is difficult to isolate reading from writing and speaking from listening. The second important change that each phase has 3 categories counting learn self assessment and test. While most of the learning materials are assisted by another pages. For instance, the shopping page in Speaking and listening is linked to another page where you can learn names of fruits and describing people page linked to a page where you can learn another names of professions.

5.3 Human Computer Interaction (HCI)

It is very important to consider Human Computer Interaction (HCI) when a website is designed, in particular for WBLSs as the user intend to spend more time surfing that site. This section is going to outline some of human issues that are important in HCI from (Introduction to Human Computer Interaction 2001)

- **Text:** the smallest text in the website is 12 point to allow the users to read without difficulty, and hence the users do not have to be very close to the screen. All texts are written in a lower or mixed case to allow comfortable read

- **Instructions:** the system provides easy Instructions for the users. For example, exercises instructions, see figure 5.

  Reading Practice

  Click the START below when you are ready to read. Then click the FINISH button when you finish reading. I will tell you your reading time.

  START

  Figure 5, Easy instructions
• **Support:** there are different kinds of support that help the users. For example, alert message that appear when you reload the homepage, see figure 6.

![Microsoft Internet Explorer](image)

This web site works with only Internet Explorer, visit FAQ page in this site to download your version

**Figure 6, message alert**

Also there is a Frequently Asked Questions (FAO) that mainly provides technical support, see figure 7

**1. View Arabic Text**

To view arabic text it is recommended to all learners to use **Internet Explorer 5.5** or above. Use the following link to download your version of Explorer:

![Internet Explorer](image)

To view Arabic Text from Internet Explorer, do the following: View ——> Encoding ——> Arabic (Windows)

![Encoding Options](image)

**Figure 7, snapshot of FAQ webpage**

There are some students who study in some universities or due to an old operation system they cannot download all the softwares requires for some reason. Therefore providing substitutions is an indirect support. For example. If the
student cannot play a video he has another function that would replace the video, which is the use of gif animation picture. Or if the user cannot play .wma he can try another format, which is mp3 format.

- **Interactive exercises**: allows one to one communication. As the student answers the question, s/he can check the answer or get a feedback. This motivates the student to do more exercises as s/he feel there is somebody listening and talking to him.
6. Evaluation

6.1 Project Evaluation

6.1.1 Acceptance criteria

Evaluating this report would be conducted with to the original “acceptance criteria”-justified in section 1.6 this project has met the acceptance criteria, see table 5, and therefore it is acceptable as a solution to the problem. This criteria is discussed in more detail below.

<table>
<thead>
<tr>
<th>Acceptance criteria</th>
<th>Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>• All objectives and minimum requirements have been covered.</td>
<td>Yes</td>
</tr>
<tr>
<td>• A solution in response to the original problem has been produced</td>
<td>Yes</td>
</tr>
<tr>
<td>• A written report.</td>
<td>Yes</td>
</tr>
<tr>
<td>• Interactive solution.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 5: acceptance criteria

Project objectives and minimum requirements:

1. Find out users’ requirements.

This objective has been achieved by investigating different methods aimed to find out users’ requirements referred to SQIRO with justification of chosen methods. Finally, the outcome of users’ requirements has been analysed in term of students’ requirements and a teacher requirement.
2. **Comparison of methodologies for the development of the WBLSs**

Four different methodologies have been discussed clarifying their strength and weaknesses with the intention of choosing the most appropriate methodology to approach the solution.

3. **Learn appropriate technologies to implement the solution.**

A variety of implementation tools have been learned with the purpose of building the system in a high quality level including audio & video, web developer and design tools which explained in detail why each tool has been chosen in implementation tools, section 5.

4. **General evaluating of the project and the system.**

After coming up with a solution that would enable students to learn Arabic, it is very necessary to evaluate this solution. This evaluation consisted from two parts. The first part evaluate the project in general, this evaluation includes objectives and minimum requirements evaluation as well as schedule evaluation. The second part concern with the system evaluation which includes users’ requirements evaluation, content evaluation, and a general evaluation of the website.

5. **Develop a system that would satisfy the essential users’ requirements.**

Arabic Language Centre (ALC), which is the name of the system, has been developed. This system has met the essential users’ requirements such as to include different phases of Arabic language-reading and writing listening and speaking that would give the choice to the learner where to focus, being simple and easy instructions. As pronunciation is important at this stage, many sound clips have been created. In fact, the system met the users’ desire of having a feedback feature that would evaluate their performance and further features such as printable pages.

6.1.2 **Schedule Evaluation**

The project plan based on a Rapid prototype, which enable better communication between users and the system analyst. This prototype is very flexible as Figure 4 in section 2.2.4 illustrates. However, the consequence of this flexibility is being late in coping up with the schedule. Another reason that my partner, who is due to deliver a baby on 5th may require me to give her an attention.
6.2 **System Evaluation**

First of all, this system has been evaluated by the users including DR. Latifa, an Arabic language lecturer, who evaluate the content of the ALC and one of the students, who gave a general evaluation of the system. Secondly, the system has been evaluated by the developer using an evaluation sheet provided by Oxford Centre for Staff and Learning Development.

6.2.1 **Users Evaluation**

Since this WBLS has been designed to meet users’ requirements, it is essential that these users play a part in evaluating the system.

- **DR. Latifa evaluation**

  In general speaking it is true to say that the delivered system has satisfied the user. An evaluation letter has been written by DR. Latifa included as appendix B

- **A student Evaluation**

  A student also should play a part in evaluating the system. The plan was to have both of the students who contributed in finding users’ requirements to evaluate the system. However, the request has been accepted by one student due to the reason that the other student is too busy and he is close to the exam period. A letter has been given to me evaluating the system. This Evaluation is available in Appendix C

- **The developer Evaluation:**

  In addition to users’ evaluation, the developer evaluated this WBLS using a criteria that has been published by (Oxford Centre for Staff and Learning development, Mach 2003) the reason of choosing the specified evaluation sheet is because it concentrate more in finding out the strength and weaknesses of the system. Therefore, this questionnaire has been found appropriate for evaluating WBLS. This Evaluation is available in Appendix D
References:

- (2001) “Introduction to Human computer Interaction” School of Computer, the University Of Leeds


• The Arab World, [online]. [ 16/04/03] Available from World Wide Web: <http://cecilmarie.web.prw.net/arabworld/arabic/>
Appendix A

This appendix will address my personal reflection about my final year project. First of all, it was very important for me to choose a project that will enable me to deliver a visible work apart from the written report, which would make it more interesting and valuable. I have chosen this topic specifically because I am an Italian language learner and I do feel that traditional learning can be boring. I was thinking one day that if learning Italian, the musical language, can be difficult to some students then how about learning Arabic, which is definitely more difficult to learn comparing to Italian? As a result, Building a WBLS teaching Arabic interested me. However, it was very time consuming especially as I had to produce the materials including images, video, sound clips and others.

On the one hand, I have learned a lot of aspects that I did not know about before. For instance, I have learned about a lot of programs including audio and video, HTML editors and images softwares. Learning these softwares again consumed a lot of time. Moreover, new programming skills have been learned that expanded my knowledge in HTML. Also, different methodologies for building a system have been learned.

On the other hand, there are some issues went wrong. The important thing, there are some implementation tools that I could not cope in learning them the reason is that it is difficult to learn them without guide and very time consuming such as JavaScript and flash, which are completely new for me. Never the less, they are substituted by other alternatives. Another issue, I had a difficulty in finding out many volunteers as I expected to permit me doing more interviews and have a better understanding of users’ requirement.

My advice to the students who want to do a similar project is to work hard from the beginning as unexpected problems might occur and make sure that they do have enough background of implementation tools and programming language.

I am happy with the overall outcome of the project. I believe I did very good comparing to the short time I had considering the point that I am committed to work with one of the societies and to allow my self to spend some of my time with my
pregnant, who does not want to feel that she left behind. I am interested to carry on working with this project and develop more as there is no end to it.
Appendix B

Teacher Evaluation

Bader Al-Alawi has developed a very good prototype multimedia Arabic course for beginners. He covered all the skills of language teaching (reading, writing, speaking, listening). The units in the speaking and listening section are based on real situations and each unit is followed by useful vocabulary related to the topic. In addition, some interactive exercises are provided, which give the learner a chance to test his learning. In the reading and writing section he focussed on teaching the alphabet by the use of sound and animated pictures. He divided the letters into groups so that it would be easy for the learner to learn them. He also supplemented the section with some exercises for practising writing and connecting the letters and for sound identification. On the whole the course can be useful for learners who want to get by in Arabic and who want to know how Arabic sounds like. The only problem is the sound files that need to be made clearer.

Latifa Al-Sulaiti
Appendix C

A Student Evaluation

To: the website builder
Web Based learning system in teaching Arabic language

Re: evaluation of the system

Firstly, I would like to express my appreciation from you choosing me of your subjects.

After using your website provided in a CD, I find the materials are useful in learning Arabic. It is indeed user friendly and make learning more fun. However it need to be developed more by providing new materials specially in the speaking and listening section.

Good luck on your endeavours and wishing you further success in the development of the system.

Your;

Maricel Empacess

Arabic student

Appendix C
Appendix D

Developer Evaluation

Evaluation Sheet

Answer the following questions for each of the sites you visit. When you do answer them try to examine the sites as if you were having to do the lesson.

1. Apart from the subject area what makes this site attractive to use?

   1) Interactive exercises which give the students feedback and motivate them at the same time.

   2) Students can see how letters are written using to different techniques including gif animation and video (wmp format)

   3) Lots of audio files which enhance the demand of learning listening provided in two different formats.

2. Apart from the subject area what do you think would put students off?

   1) Transcription may be found confusing for some students because there are 28 letters in Arabic some of them have unfamiliar sounds. The reason why I have included a page called Letters with unfamiliar sound”

3. What is the aim of the lesson?

The objectives of this project is to

- Learn reading and writing Arabic letter, numbers and simple words.
- Pronunciation
- Learn how to join letters to consist a word
- Learn basic conversations.
4. What are learning outcomes of the lesson?

The outcomes of this project is to

1. Learn reading and writing Arabic letter, numbers and simple words.
2. Pronunciation
3. Learn how to join letters to consist a word
4. Learn basic conversations.
5. Enhance the listening ability

5. How does the lesson achieve the outcomes?

• By providing some materials to be learned using animation and audio
• By providing some self evaluation exercises.
• By allowing the student to test him self.

6. What in your opinion are the strengths of the lesson?

1. Animation
2. Feedback

7. What in your opinion are the weaknesses of the lesson?

1. Speaking as it is hard to apply speaking exercises

1. What is you overall opinion of the course/lesson from a learners perspective?

Good, and with more development and updating it, this WBLS could be very popular.

And I believed that a solution to the original problem has been met.