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WEB ASSISTED LANGUAGE LEARNING SYSTEM FOR ENHANCING ARABIC LANGUAGE LEARNING USING COGNATES

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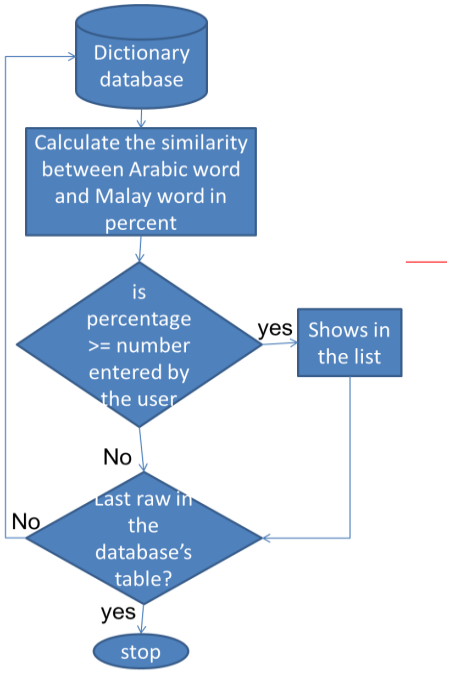
Graphical abstract



Abstract

This paper aims to study the use of the WWW in the learning and teaching of Arabic as a second language. Moreover, it aims to study the combination of Web Assisted Language Learning (WALL) and cognate (words similar in meaning and pronunciation) transfer for Arabic language. In addition, the main goal of this paper is to enhance learning of the Arabic language with the approach of WALL. Therefore, the authors built an Arabic WALL system that automatically identifies cognates in Arabic and any other language. The WALL system displays the cognates in a list and as lessons. However, for evaluating the system, Malay language was chosen to be stored in the database. To evaluate the system, a quantitative method was used in the study. A survey was conducted among two groups of respondents. The respondents of the first group were five (5) Malay-speaking learners. The respondents of the second group were five (5) teachers who teach Arabic to Malaysian students. The questionnaire consisted of 14 closed questions (five-point Likert scale). It was found that the majority of participants were satisfied using the system and that they preferred it over traditional learning. They also found the system to be an effective learning tool. Overall, the findings showed that the goals of the study had been achieved.

Keywords: Arabic, Cognate, Computer-Assisted Language Learning (CALL), Web-Based, Web Assisted Language Learning (WALL)

1.0 INTRODUCTION

One high-demand language that people are keen to learn is the Arabic language. The Arabic language is the mother language of over 300 million people, thus it is the fifth most commonly spoken native language in the world. In addition, Arabic is the official language of 20 countries, as well as an official language of the Organisation of Islamic Conference, the Arab League, the United Nations and the African Union [1].

Unfortunately, learning the Arabic language as a second language is considered to be difficult among learners. Hence, it is recommended that instructors use technology and to enhance their teaching of the Arabic language, as use of technology and multimedia motivates learners and enhances their performance in the classroom [2]. As technology provides visual and audio representation of the word, that will help learners to get many benefits in their self-learning of the language [3].

To enhance learning of the Arabic language, the knowledge of cognates could be used (cognates are words similar in meaning and pronunciation in

the first language and the second language). Using cognates helps with capitalizing on learners' knowledge of their first language and can provide a springboard for developing their second language [4].

None of the previous studies has considered a combination of Web Assisted Language Learning (WALL) and cognate transfer for Arabic language. Therefore, this paper aims to automatically identify cognates in Web-based learning system.

2.0 WEB ASSISTED LANGUAGE LEARNING

The computer is used as a tool throughout education, including in language learning. In the language area, as identified by Abu Naba'ih, Hussain, Al-omari, and Shdeifat [5], Computer-Assisted Language Learning (CALL) is the approach of using a computer as a tool for learning and teaching a language.

The internet and the World Wide Web (WWW) have provided an incredible boost to CALL, since they offer various educational resources, software and tutorials covering all language learning skills, such as grammar, writing, speaking, and listening [6]. The science which studies the use of the WWW in the learning and teaching of second languages called Web Assisted Language Learning (WALL) [7]. WALL helps language learners because of what it provides, including chat rooms, e-mail, access to journals, online research, communication with native speakers, etc. [8]. Multimedia, varied software and the internet can all help to provide rich environments for learners to practice language [9]. New web-based technologies have changed the ways of traditional learning that rely on teacher-centered instruction only, since learners are now empowered to learn without the need of having teacher-centered instruction [10]. The web is used as a tool to facilitate the language learning process due to its capabilities to provide a one stop source of information and opportunities for learners to communicate among themselves synchronously and/or asynchronously [11]. The internet provides a virtual language learning environment that allows people to communicate around the world [8].

3.0 ARABIC LANGUAGE LEARNING ASSISTED BY THE COMPUTER

Using technology for Arabic language learning is not that simple. One of the challenges facing Arabic CALL is that Arabic is a non-Roman orthography language [12]. Unfortunately, the application of computer technology in the teaching of the Arabic language is still at the development stage [13]. Suliman, Mukhtar and Sahrir [14] state that the challenge is the lack of Arabic CALL resources in the Arabic language. Little research has been done in the field of computerized language and lexical resources to develop complete and finalized products for Arabic language and there are only limited Arabic language as a second language learning frameworks that are electronic and online [15].

However, there are some research give the reasons for hope to enhance the Arabic CALL. Ghalib and Sarudin [16] discussed an online Arabic course at the Center for Languages and Pre-university Academic Development (CELPAD) at the International Islamic University, Malaysia (IIUM). The researcher concluded their paper by stating the limitations and challenges that face application of computer technology in Arabic courses. However, they declared that although research on the use of CALL to teach the Arabic language is limited, a new generation of teachers is more receptive to CALL applications. Abufanas [17] built an Arabic learning language tool software. It was found that the language structure was correct, learners were satisfied with the software and they found it is efficient and simple to use. Sahrir, Yahaya, and Nasir [18] featured in their study the EZ-Arabic prototype, a virtual learning platform and a tool for learning Arabic used as an alternative supplementing reference for the traditional textbook suggested by the Malaysian Ministry of Education. The results showed that the participants had a positive response towards the potential of EZ-Arabic to improve Arabic language learning among students in primary schools in Malaysia. Sahrir and Yusri [19] conducted a study on the implementation of an online Arabic vocabulary learning games prototype. The findings indicated that the application has the ability to improve and enhance learners' motivations, attitudes and vocabulary acquisition in Arabic language learning.

4.0 THE IMPORTANCE OF LEARNING COGNATES

Cognates are words that have a similar meaning, spelling and pronunciation in two languages [20]. However, similarities among languages are not necessary due to borrowing or the origin of one language. Campbell and Poser [21] argue that some scholars identifying the similarities among languages are only due to inheritance from a common ancestor. They mention other reasons for the existence of similarities among languages, such as by accident (chance, coincidence), onomatopoeia, universals and typologically commonplace traits.

There is widespread agreement that using cognates helps in facilitating the learning process, especially if the cognates in L1 are loanwords from L2 or the target language (TL), and if these cognates are words of relatively high frequency [22]. A study conducted by Ibrahim [23] on Arabic speakers and Hebrew speakers to examine whether cognates in

one's first language are an advantage to second language students' learning concluded that similarities between languages reflected by cognates' relationships can influence linguistic bilingual performance. Again, Lapo [24] claimed that knowledge of the similarities and differences between Spanish and English is crucial in regards to establishing connections between the two languages and in facilitating positive transfer from Spanish to English. Similarly, in another study on the acquisition of English vocabulary by Chinese learners it was found that foreign words are remembered by being linked to a keyword, a sound-alike native word (the acoustic link), or an interactive image that involves both the foreign word and the native word (the imagery link) [25]. Specifically, lessons that incorporate cognates (e.g. individual (English) and individuo (Spanish)) have been found to be effective in expanding learners' English vocabulary development and aids in comprehension [26]. The findings of yet another study suggest that while literacy in Spanish can provide students with access both to orthographic as well as phonological sources of information about cognate relationships, it is possible for students to draw connections between cognate pairs on the basis of sound alone, so that students who are not literate but orally proficient in Spanish are likely to benefit from instruction in cognate awareness as well as those who are literate in Spanish [27]. A study of Persian students learning English by Tavakoli and Gerami [28] randomly and equally divided student participants into three groups. The participants were given immediate recall tests and post-tests two weeks after the treatment. They found that the students in the keyword method group retained target L2 vocabulary in their long-term memory better than the other groups. Furthermore, the findings showed that the use of the keyword method can largely reduce learners' problems in the acquisition and retention of second language words. The findings obtained in the study specify that the use of visual imagery is the cornerstone of how the keyword method works.

5.0 DEVELOPING THE ARABIC WALL SYSTEM

The WALL system developed here is a web-based system written in PHP scripting language. The database was built by MySQL. The system consists of three main components: graphical user interface, similarities list, and lessons. The interface allows to move the user between these elements. The similarities list interface displays all the cognates found according to the similarity percentage entered by the user. The lessons interface displays all the lessons. The selected lesson will be displayed with highlighted (as hyperlink) Arabic cognates if found providing the translation of them in the other language.

The system is able to find the cognates in Arabic and any other language as long it is stored in the database. However, for evaluating the system, Malay language was chosen to be stored in the database. There are many cognates in the Arabic and Malay languages. Due to historical, geographical and religious reasons, the Arabic language has had an influence on the Malay language. There are about 3303 Arabic loanwords in the Malay language [29]. An example of cognates in Arabic language and Malay language are the Arabic word 'قاموس ; pronounced as Qamus' and the Malay word 'Kamus', which both have the same meaning: 'Dictionary' in English language [30]. Figure 1 shows how the system works as flowchart. Basically it reads the words in the dictionary database and then calaculates the similarity between the Arabic and Malay words. It will show the words with the similarity percentage equal or bigger than the one entered by the user.

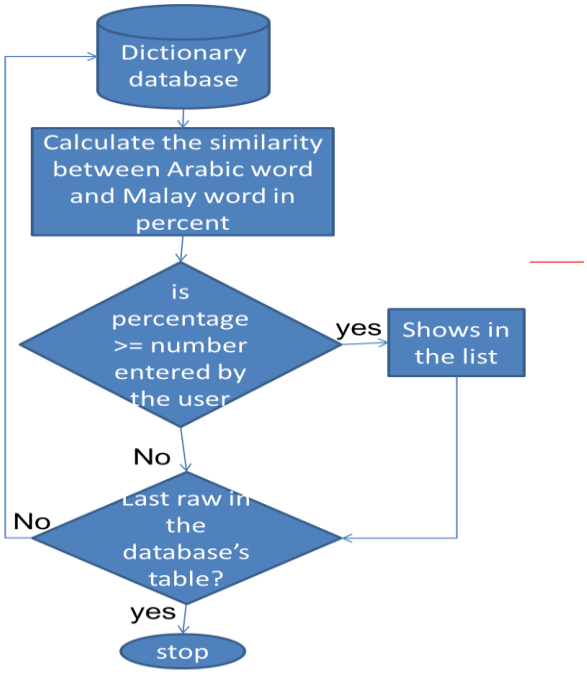


Figure 1 Flowchart explains how the system works

Figure 2 shows the similarities list interface. This interface should auto list all similar words between Arabic and Malay with similarity percentage entered by the user. While Figure 3 shows the selected lesson interface. This interface shows the lesson which the user selected among many lessons. The similar Arabic words will be highlited and underlined. When the user clicks on any highlighted word, pop-up box will be displayed with Malay translation of that word.

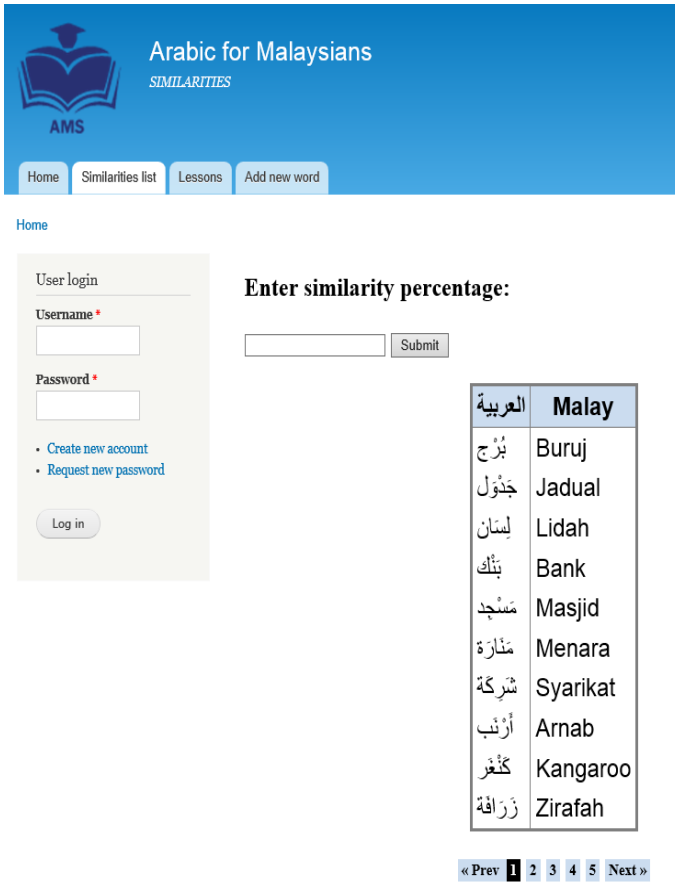


Figure 2 The similarities list interface

Figure 3 The lesson interface

6.0 METHODOLOGY

The research methodology used in this study was a quantitative method. A survey was conducted among two groups of respondents. The respondents of the first group were five (5) Malay-speaking learners. The respondents of the second group were five (5) teachers who teach Arabic to Malaysian students. . Both groups viewed the system and were able to use it in order to fill out the questionnaire. The questionnaire consisted of 14 closed questions (five-point Likert scale) as shown in Table 1.

The measurements were developed based on usability and user experience (UX) measurements. Bevan in [31] mentioned: "There are many different types of measures of usability and user experience (UX). The overall goal of usability from a user perspective is to obtain acceptable effectiveness, efficiency and satisfaction" (p. 13). The survey focused on the WEB-based system's effectiveness and user satisfaction only. Moreover, the survey was designed to examine the objectives or goals of the WALL system which are to help Arabic language learners progress faster and further, to increase their motivation, to help them feel more confident, and through the use of cognates and learning using the system, it is hoped, is better than using textbooks.

7.0 RESULT AND DISCUSSION

Descriptive statistics were adopted to analyze the responses to the questionnaire. Since the researcher used a five point Likert scale in the questionnaire, the mode (the most frequently category) has been found to analyze the data collected.

In evaluating the WEB-based system's effectiveness, the majority of the participants strongly agreed that they were able to find information they needed successfully, quickly and simply. None of them signified that they strongly disagreed or disagreed. The average or the mode was 'Strongly Agree' for all the questions in this part.

In evaluating the participants' satisfaction towards the WEB-based system, there was a high amount of agreement. None of them signified that they strongly disagreed or disagreed.

In evaluating the WEB-based system objectives, the results of the responses shows there was a large amount of agreement.

Overall, it was found that the majority of participants were satisfied using the system and that they preferred it over traditional learning. They also found the system to be an effective learning tool. The findings showed that the goals of the study had been achieved. Refer to Table 1 for more details about the responses based on all the three measurements.

Table 1 Questionnaire and result

	Item	SD	D	N	A	SA	Mode
System's Effectiveness	I successfully found information I needed using the website.	0%	0%	10%	30%	60%	SA
	It was simple to find information I needed using the website.	0%	0%	0%	20%	80%	SA
	I was able to find information I needed quickly using the website.	0%	0%	0%	20%	80%	SA
Satisfaction Towards the System	The information provided from the website is easy to understand.	0%	0%	10%	30%	60%	SA
	The organization of information on website screen is intuitive.	0%	0%	0%	80%	20%	A
	The website navigation is intuitive.	0%	0%	0%	50%	50%	SA,A
	The interface of website is pleasant.	0%	0%	20%	50%	30%	A
	Overall I liked this site/ I felt comfortable using the website.	0%	0%	0%	60%	40%	A
System's Objectives	Learner can progress further using this style of learning (learning cognates).	0%	0%	0%	70%	30%	A
	Using this style of learning (learning cognates) increases the motivation to learn	0%	0%	10%	30%	60%	SA
	learning using this style (learning cognates) will help the learners to feel more confident in learning the language	0%	0%	0%	30%	70%	SA
	Reading a text with highlighted similar words, help the learner to learn faster.	0%	0%	0%	0%	100%	SA
	Reading a text with highlighted similar words, help the learner to progress further.	0%	0%	0%	20%	80%	SA
	Since the website allows adding text and similar words will be auto highlighted, it is better to learn via it rather than learning from textbooks (dynamically).	0%	0%	10%	60%	30%	A

*SA =Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree

8.0 CONCLUSION AND FUTURE WORK

This paper has discussed the web assisted language learning (WALL) and using it for Arabic language. It has also discussed how using the keyword method in learning a language, such as using cognate awareness, can improve language-learning performance. Based on previous studies, this study has examined how Malay-speaking learners can enhance their Arabic language learning through a combination of both WALL and cognate awareness methodologies. For this purpose, Arabic WALL system was developed which provides cognates in a list and as lessons. The system was given to Malay-speaking learners and teachers of Arabic language to evaluate it. Fortunately, the findings from the survey that was conducted among learners and teachers showed that the goals of the study were achieved. The findings showed that the majority of the participants, after using the Web-based system, were satisfied with it and this proves the effectiveness of the system.

For future work, it is suggested to develop an experimental research design in order to evaluate whether learning the Arabic language via this Web-based system is more effective than the standard learning method. The participants (learners) could be divided into two groups; in the first group, the learners could learn via the Web-based system, while in the second group, the learners could learn in classrooms. Then, the progress of both groups could be compared. One aim of an experimental design is to create a causal connection between the independent and dependent variables [32].

Regarding development of the WALL system, many suggestions can be made. One suggestion is to enable learners to learn cognates from context. It has been found that learning vocabulary from context helps in improving the learning of the language [33]. Therefore, it is suggested that when a user clicks on any word in the cognates list, it shows the sentence or the context that contains the word. Another suggestion is to sort the cognates by category. It is also suggested to add a 'Search' option so that learners can search for a particular word. Moreover, it is suggested to display the cognates in an index or in alphabetical order. Last but not least, it is strongly recommended to add audio and visual objects such as picture and video features so that learners can listen to the pronunciation of cognates and improve their pronunciation skills. Using audio-visual materials when learning a foreign language helps to stimulate and facilitate the target language [34].

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