ENHANCING STUDENTS´ VOCABULARY AT THE PREPARATORY COURSE USING MOBILE LEARNING

LA MEJORA DEL VOCABULARIO DE LOS ESTUDIANTES DEL CURSO PREPARATORIO MEDIANTE EL USO DEL APRENDIZAJE POR EL MOVIL

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Abstract

Learning English is essential in today´s world and the learning process goes beyond the mastery of the four basic skills; it requires the learner to have a significant vocabulary range in order to perform efficiently in a given area. This can be done by using mobile learning pedagogy encouraging learners' autonomy and involvement in the learning task.   At the Universidad Central «Marta Abreu» de Las Villas the Preparatory course students face some limitations concerning vocabulary, evidenced in some communication breakdowns when communicating in English. The purpose of this research is to propose the creation of an app to broaden students' vocabulary to foster students' fluency when communicating in English. A qualitative methodology was used in the study including some

methods from the theoretical, empirical and mathematical level. As a result, it was evidenced that students' lack of vocabulary is due to the fact that some topics are taught in all the skills and hence the vocabulary is more consolidated while others are dealt in only one skill resulting in poor systematization. Therefore, it was necessary to design an app for the cell phones to provide the vocabulary in those topics and skills that students need for communicating efficiently.

Resumen

Aprender inglés es esencial en la actualidad y el proceso de aprendizaje va más allá del dominio de las cuatro habilidades básicas; este proceso necesita que el estudiante tenga un rango de vocabulario significativo para que pueda desarrollarse eficientemente en un área determinada. Este objetivo se puede cumplir a través de la pedagogía apoyada en el uso del móvil que estimula la autonomía de los estudiantes y su participación en el proceso de aprendizaje. En la Universidad Central «Marta Abreu» de Las Villas, los estudiantes del curso Preparatorio enfrentan algunas limitaciones con respecto al vocabulario, lo que se manifiesta en problemas de comunicación cuando intentan realizar esta actividad en el idioma inglés. El objetivo de esta investigación es proponer la creación de una aplicación para ampliar el vocabulario de los estudiantes y así fomentar la fluidez de los estudiantes al comunicarse en inglés. Para esta investigación se utilizó una metodología cualitativa incluyendo algunos de los métodos de los niveles empíricos, teóricos y matemáticos. Como resultado se evidenció que la falta de vocabulario de los estudiantes se debe a que algunos temas son tratados en todas las habilidades y por tanto están bien consolidados; sin embargo, otros temas solo se tratan en una sola habilidad lo que resulta en una pobre sistematización. Por tanto, fue necesario diseñar una app para el teléfono celular que le propiciara el vocabulario de los temas en esas habilidades que los estudiantes necesitaban para comunicarse de manera eficiente.

enseñanza y aprendizaje; gama de vocabulario

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INTRODUCTION

Mastering a wide vocabulary range is crucial for foreign language learners. First of all, it is necessary to clarify that without vocabulary knowledge is impossible to fully communicate complex ideas, that is exactly the main goal pursued by foreign language learners: to properly express themselves using a certain foreign language.

When studying a foreign language most of the amount of the available time is employed in the improvement of four basic skills (speaking, writing, reading and listening); however, no matter which of these four skills refer to, vocabulary knowledge will always be indispensable to properly progress in that skill's development. For example, having a wide vocabulary range enables students to produce complete spoken and written texts, which would be almost impossible to achieve if they do not know the specific words they need to express in the process of communication. (Alqahtani, 2015)

Also, when listening to a recording it is essential that the students are able to recognize at least the most important words to have a general idea of the recording's topic. Although this may be attained in some occasions with an average knowledge of the given subject, it may prove to be insufficient if specific details that are not easily grasped are required. Furthermore, it has been proven that the level a student is able to understand a recording is directly proportional to the depth of vocabulary knowledge. There is a simple reason that the human brain is unable to understand a word when the person has never heard it before and if the missing word cannot be inferred there is no possible mean for the student to obtain the desired information.

Referring specifically to the reading skill, the lack of vocabulary has been identified as the main reason to prevent students' fully understanding of a given text, due to the importance of having a solid vocabulary knowledge regarding the topic that is presented to us with the purpose of easing the reading process. As it has been stated here, possessing a wide range of vocabulary is crucial to master all the different components

that integrate the process of learning a foreign language, making it an essential pillar which supports all the knowledge we have regarding that foreign language and also allows us to broaden it with its own enhancement.

After analyzing the essential role of vocabulary in the study of a foreign language it is stated, that the students who have some difficulties related to vocabulary knowledge see their performance constantly undermined during the continuous assessment. This situation takes places in the context of the Preparatory course with some students of the degree course English Language with a Second Foreign Language: French; at the Central University «Marta Abreu» of Las Villas. Those students often receive poor grades in the four language skills, specifically in the assessment descriptor: vocabulary range. This is due to the lack of ideas and specific vocabulary on the topic they are discussing.

The previously mentioned problem has been observed mostly in the productive skills: Speaking and Writing, since they demand greater vocabulary knowledge for attaining a satisfactory result. One of the most common limitations observed in the

students is in producing complex written and spoken texts on a given topic even if they had been in contact with it before. This limitation takes place since students learn over one hundred words per year and there is no published evidence for an approach to vocabulary instruction that could result in the learning of over 500 words per year (Nagy & Herman, 1984). In addition, they usually struggle too hard to understand the general idea of a specific recording and sometimes fail to infer the meaning of certain expressions due to the lack of previous vocabulary knowledge, which would allow them to better analyze the discourse. Furthermore, the lack of a wide vocabulary range is one the main limitations to fully develop the scanning and skimming skills during the reading process; being one of the causes of the poor results presented by the students in the reading skill. According to Agustin (2009) building vocabulary skills improves reading comprehension and reading fluency. So, without building a large vocabulary, students cannot read successfully. (p.26)

To identify this problem, the authors based themselves on the empirical

evidence provided from their personal experience as foreign language learners and teachers. According to Meara (1980), it is necessary to state clear that vocabulary acquisition has been acknowledged as the single greatest source of problems students have to overcome when learning a foreign language. (p.25)

Another important reason for this lack of vocabulary is the limited exposure to the linguistic environment of the foreign language studied. For example, if students are obliged to constantly use the foreign language in everyday life communication this will consequently develop their language knowledge. A third difficulty students face is the lack of bibliography with respect to vocabulary of the course as such.

In fact, in the Preparatory course, students work with the *Face to Face Series* of textbooks and it is evidenced that the syllabus and lessons do not systematize the new vocabulary enough for its consolidation at the elementary and intermediate level. Despite the obstacle this represents it is understandable because the *Face to Face Series* has a vocabulary book; however, this book is not available for the students, leaving the students

without a textbook that really focuses on vocabulary resorting to alternative sources that are not always the most reliable ones. As most of the problems require vast resources to be solved, the authors would like to guide their efforts towards finding a possible solution for enhancing vocabulary range and promoting vocabulary acquisition and consolidation in the Preparatory course.

Following that course of action, it is necessary to highlight that the implementation of ICTs (Information and Communication Technologies) has showed very positive results in aiding the process of learning a foreign language and specifically in vocabulary acquisition. For instance, recent literature has proved that ICTs can be a powerful tool in a language classroom; having a lot to offer to the students who enhance their vocabulary and develop their speaking and reading skills, while the professors role change from only being a teacher to also be a facilitator who will help them fully understand and work with these new technologies. The lesson approach also changes because instead of being centered on the professor the focus of attention passes to the learners, who are now

the protagonists with much more freedom to act and play a truly active role in the learning process. As it was to be expected, Internet is in the center of this educational revolution as the mean to acquire all the needed implements to support foreign language learners. For example, virtual classes provide a stress-free environment where the students feel freer to express themselves without the tension of being in an actual classroom. Also, Internet provides the means for having a vast amount of literature in the chosen language at the reach of the hand, motivating learners to read about the topic of their choosing without having to make an effort to find it. The same happens with movies and songs, always at the disposal of any willing student, even offering the possibility of downloading the subtitles of the movies and the lyrics of the songs in their original language. All this favors the development of the learners' vocabulary because it is an attractive approach to the subject of study and at the same time it is accessible to the majority of the population.

In spite of all the advantages offered by the ICTs in the field of vocabulary range enhancement a major obstacle is presented to the authors: Internet. This service is of great utility but in Cuba the access to it is restricted; hence, an educational tool mostly based on it would not be functional. The solution is not to close the doors to progress but to adequate the new educational strategies to the Cuban specific context, which means: to develop a tool using the ICTs that does not rely on the Internet to function.

The lack of bibliography for the Preparatory course students to study vocabulary, leads us to find and alternative using the new technologies and to analyze this problematic situation:

How to enhance the Preparatory course students' vocabulary range through the ICTs?

The overall aim of this article is:

✓ To propose an app for enhancing students' vocabulary range at the Preparatory course through mobile learning.

MOBILE LEARNING AND ITS IMPLEMENTATION IN TEACHING AND LEARNING VOCABULARY IN ENGLISH AS A FOREIGN

LANGUAGE. THEORETICAL CONSIDERATIONS

Strategies for learning vocabulary

In recent years, vocabulary acquisition has received more attention, and researchers and front-line teachers are increasingly involved in this research field. (Song & Chen, 2017)

Brown and Payne (1994, in Shen, 2003, p.14) proposed a five-step model for vocabulary learning: encountering new words, getting the word form, getting a clear image, learning the meaning of the words, and using the words. Renaming these steps, vocabulary learning strategies can be grouped into **5R** processes: **receiving**, **recognizing**, **retaining**, **retrieving**, and **recycling** in four language skills. The **5R model** is better seen as a dynamic circulatory system in which loops and sub-cycles are likely (Figure 1).

This ideal way of helping vocabulary learning involves a circulating process, allowing for retrogression from lapses in attention or memory under condition of stress. Also, it seems to encapsulate the general dynamics that learners use to learn vocabulary. In this process model, techniques may be emphasized differently from step to step. Each of the steps may involve backward as well as forward loops. Most learners will progress forwards cumulatively in the long term and will therefore, compensate for retrogressive loops.
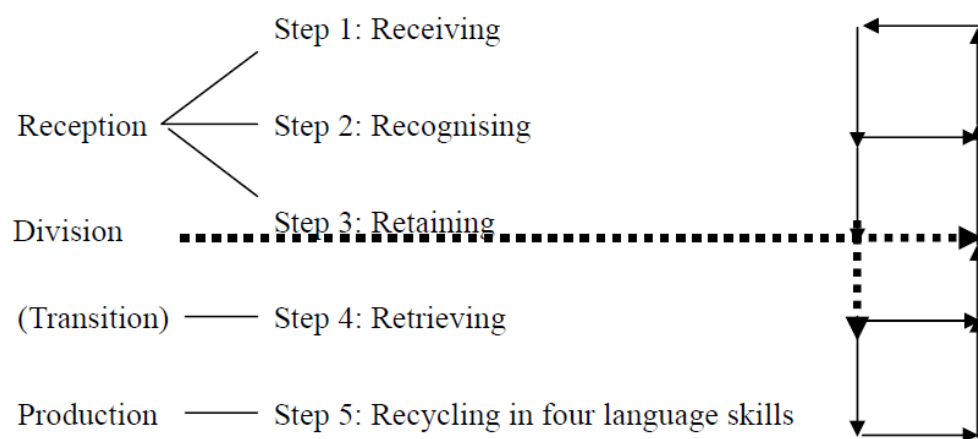

Figure 1. Stages of vocabulary learning- a 5R model involving loops

Using mobile learning for enhancing vocabulary

Technological advancements are undeniable and scientific literature supports its contribution to education.

For instance, some authors talk about the creation of a teaching environment by using a multimedia classroom so that students can grasp the sound, shape, meaning of words, and improve their use of vocabulary (Jiachun & Jie, 2016). However, others proposed the use of different modalities such as animation mode which can help students understand deeply the meaning of vocabulary expression. (Huanhong, 2016)

Although there are some controversies regarding mobile devices and the role they play in education; most authors focus their work on the advantages mobile devices present and acknowledge their pedagogical potential for delivering learning content.

Mobile devices provide information, guidance and learning experience both inside and outside the classroom. "Their portability gives more flexibility to the learner to carry out collaborative activities inside classroom. Learners can move, interact, and participate while carrying their mobile devices" (Bashar & Ghrieb, 2015). It is crucial to keep in mind that when referring to the word learner the researchers do not limit the term only to the youngsters who undertake any level of formal education; but also it includes the adult learners for whom mobile learning is as effective as for the others.

Moreover, some studies have proved that mobile phones help adult learners to memorize words in a convenient manner (Hu, 2011). As they cannot devote enough time to study the lengthy paper vocabulary lessons, mobile phones facilitate the learning process since they allow the use of reach media when appropriate. Watching videos, reading online newspapers or even playing word games on the phone are some of the off-campus activities both young and adult learners can engage in for enhancing vocabulary.

So far, it can be stated that in terms of memorizing vocabulary, mobile assisted vocabulary learning can relieve the burden of learning especially in situation where self-regulated learners lack the ability to learn in an autonomous manner. The repeated exposure to vocabulary items on a daily basis via mobile phones is conducive to enhanced vocabulary learning. Since most people have access to this technology, it is an excellent means for assuring vocabulary learning. Due

to its portability and its user-friendly operating system people can easily interact with their phones and continue the learning process outside the classroom; as a result, learners can undergo this process at anytime and anywhere.

METHODOLOGY

After analyzing the current situation regarding the problem in this research context in respect to students' vocabulary range, the authors considered both qualitative and quantitative approaches for the accomplishment of the research purposes. Throughout the research process, some methods of different levels were applied such as:

From the theoretical level:

- Analysis and synthesis: for establishing the research process foundations.
- Structural-systemic: used throughout the whole research process and in the design of the proposal from a logical and systematized view.
- Inductive-deductive: This reasoning made possible the generalization about the topic at a global level from particular elements.

From the empirical level:

- Document analysis: It was used to find out the amount of vocabulary that is considered in the teaching and learning process of the subject English Language in the Preparatory course. Also, to review the bibliography that is used to identify shortages or difficulties in order to create the database for the proposal of the app.
- Survey and Interviews: They allowed the researcher to get the professors' and students' opinions and perceptions regarding the importance of the proposal for enhancing vocabulary.
  Sample: The students and professors from the Preparatory course.

From the statistical and mathematical level:

- Table analysis and graph representation: It was used in order to group data in different classes and to distribute the absolute frequencies and percentage and describe the results.
- Sampling Technique and Sample Size: In selecting the participants, an intentionally

selected sampling procedure was employed. In this case, Preparatory course students as well as the professors involved in the teaching of this course.

- Percentage and statistics analysis: to process data obtained from surveys. The software IBM SPSS Statistics 21 was used.

Sample and research methods description

- The research was carried out in the context of the course English Language with a second foreign language: French at the Universidad Central «Marta Abreu» de Las Villas; specifically, in the Preparatory course. In selecting the participants, an intentional and reasoned sampling criterion was employed. The sample was composed by 28 students and 5 professors who are currently involved in the teaching of the course as well as some department authorities including the head of the department, the head of studies and the head of English Language discipline. Therefore, there were 35 participants in total.

- The main objectives of the research were explained to the participants, as well as the positive impact it could have on the improvement of the teaching and learning process of the subject English Language for the Preparatory course and more specifically on the vocabulary learning process. The research work had all the support and collaboration from the department authorities and staff in providing all the necessary information in respect to the topic.

RESULTS DERIVED FROM THE NEEDS ANALYSIS OF THE RESEARCH CONTEXT

The results are described following the information obtained from the different research methods using triangulation of sources and methods.

Results derived from the information provided by the research methods

-Document analysis

Five documents were analyzed during the investigation process, those were the Curriculum "E" and the syllabus of each of the skills: Speaking, Writing, Listening and Reading.

The Curriculum of the degree course is the latest modification of the study curricula, introduced in the academic year 2018-2019. It includes 13 disciplines and the backbone is English Language. Didactics, Interpreting and Translation are going to be the two outputs of students' specialization.

In respect to the structure of the English Language discipline, it comprises the subjects: English Language I, II, III, IV, V, VI, that are taught in each semester of the first, second and third year respectively. The subject English Language for the Preparatory Course is not included in the curriculum since those students are not part of the degree course yet, but it is the ground subject for the rest of the years. It is a requirement of this subject to be graded with the marks 4 and 5 to get promoted to the first year.

The main descriptors analyzed were the general objective for the degree course, fields and areas of professional performance.

The general objective, related to the two specializations: interpreters/translators and professors. It states that the students to be interpreters/translators have to perform as mediators in the communication between Spanish speakers and non-Spanish speakers, from English or the second foreign language to Spanish and vice versa. In addition, the students to be professors have to teach English or the second language or/and carry out research on the linguistic area.

Their professional performance will be mainly in areas of tourism, higher education institutions, editorials, newspapers, entities concerned with interpreting and translation, etc.

The Reading syllabus is designed with the contents from the textbook *Reading and thinking in English* published by The British Council in 1979. This book concentrates on the language used to organize information in written passages. The title of each unit refers to a particular method of organizing and presenting information. This organization is expressed by a certain number of grammatical structures and a certain kind of vocabulary. Each unit, therefore, includes:

a. reading comprehension exercises to help the student to obtain information from a passage by following the writer's method of organization.

b. exercises to draw attention to the way grammar and vocabulary are used in achieving this organization.

Both types of exercise are designed to develop reading strategies which students will be able to apply to the passages they may need to read as part of their studies. The course leads students on to simplified passages so that they can practice how to apply these reading strategies.

The Speaking syllabus is designed with the contents from the textbook *Face to Face Elementary* and *Pre-Intermediate*. It is focused on almost all the aspects of the speech: intonation, pronunciation, grammar and vocabulary, to mention some. Each of them has 12 units with the topics which deal with everyday life situations and experiences in English language. The books progress in the language complexity and the vocabulary range. *Face to Face* is fully compatible with The Common European Framework of Reference for Languages and gives students regular opportunities to evaluate their progress. Among its key features people can find an interactive Language Summary which includes all new vocabulary, grammar and functional language. Moreover, there is strong emphasis on reviewing and recycling in every unit, including Quick Reviews at the beginning of each lesson.

The Listening syllabus is designed with the contents from the textbook *Listening Extra, a resource book of multi-level skills activities* designed by Miles Craven and published by Cambridge University Press in 2004. Each activity is designed around authentic scenarios and practices specific listening skills, such as listening for details, identifying emotions or listening for opinions. It has materials for students of all levels, from elementary to upper intermediate, making it an excellent resource for every staffroom. The recordings offer a range of genres from radio and television to academic lectures, presentations and conversational dialogues. Students are also exposed to a variety of native and non-native speaker accents. Each recording only comprises two matching exercises.

The Writing syllabus is designed with the contents from the textbook *Writing Workshop*. Its purpose is to teach students to write short pieces of coherent and cohesive discourse appropriate for a particular audience and purpose. It teaches the student to

write longer, tighter and better-organized paragraphs. *Writing Workshop* has ten chapters. The first presents the basic ideas of the text:

a. There is a functional relationship between sentences. These relationships are signaled by words called discourse markers. Discourse markers familiar to the student (and, but, so) are used to introduce the concept of functional relationships.

b. Paragraphs are groups of related sentences dealing with one topic. Concerns such as audience, purpose, topic sentence, support, concluding sentence, and organization of content are introduced.

In each of Chapters 2 through 9 a different organizational pattern is considered: generalization and support, enumeration, comparison, definition, cause and result, and static description, On the whole, these chapters are divided into three parts: Sentences, Paragraphs and Exam-Type Questions. The latter section shows how the pattern taught in the chapter can be used to answer certain types of examination questions. Chapter 10 is a consolidation unit. Students are given information, an audience, and a purpose for writing. They must select appropriate patterns to organize each set of facts.

Although the focus of the book is writing, the other skills are integrated. For example, in order to gather data for their writing, students engage in either reading or speaking/listening activities. The questions on the model paragraph give de students practice in both discourse analysis and note-taking.

There is a wide scope of topics to stimulate interest. Those of contemporary concern include subjects such as environment (nuclear waste disposal, air, water and noise pollution), computers and society, the economy (inflation, unemployment), and sociological changes (divorce, violence in cities, feminism). Students can also choose to write about their own experience if they select topics such as their country´s customs, history, politics, or education system.

By the end of the document analysis, it was possible to identify the topics taught in each skill (Table 1), which served as a basis for the application of

other methods such as surveys and interviews.

Table 1. List of topics per skill

Topics/Skills	Speaking		Listening	Reading	Writing
	Elementary	Pre-Intermediate			
Personal information	X		X		
Family	X	X	X		
Daily activities	X	X	X		X
Homes	X	X	X		
Towns and countries	X	X	X		X
Travel and tourism		X	X		
Food and drink	X	X	X	X	X
Describing people		X	X		
Describing things	X	X	X	X	X
Friends and relationships		X	X		
Health and fitness			X	X (only health)	X(only health)
Leisure time	X	X	X		X
Education			X	X	X
The world of work		X	X		X
Money	X	X	X	X	X
Past experiences and stories	X	X	X		
Science and technology			X		X
Social and environmental issues			X	X	X
Shopping/Clothes	X	X		X (only clothes)	X
Crime		X		X	

-Survey to the students

The researchers decided to survey the 28 students of the current Preparatory course twice. In both surveys the researchers employed Yes or No questions and multiple-choice questions. The data were processed using the software IBM SPSS Statistics 21.

The first survey aimed at getting the students´ insights concerning their own vocabulary range, the availability of bibliography for learning and

assessing vocabulary, their frailest aspects of vocabulary and the best typology of exercises for learning and assessing vocabulary.

The results clearly materialized the researchers´ ideas regarding the students´ situation. 64% of the students agreed that their vocabulary range in insufficient. Also, 68% of the students recognized that the available bibliography is still not sufficient in terms of learning and assessing vocabulary. Moreover, in respect to the aspects of vocabulary students identified phrasal verbs, lexical fields and collocations, respectively, as the most difficult aspects to cope with. However, as an alternative to reverse this situation, the students identified fill-in the blank, guessing meaning from context and word formation as the best exercises to deal with matter.

The second survey aimed at determining the topics students find most difficult to cope with and the reasons for this situation; consequently, the topics chosen will be the ones included in the app for the students to enhance their vocabulary range. This survey was conducted taking into account the topics taught in each skill (Table 1).

The results revealed that the topics to be included in the vocabulary app are: health and fitness, entertainment, education, cities, crime, environment, business and technology. The main reasons students gave for this selection are that most of them have too much vocabulary to be covered at once; they lack vocabulary concerning some of these topics; and these topics are not dealt in each of the skills.

-Interviews to the professors

Thoroughly interviews to the professors of the course and some department authorities were carried out in order to know the professors opinions about the teaching and assessment of the students´ vocabulary taking into account the skills each of them teaches. In total, 5 professors were interviewed. The interviews were audio-recorded and transcribed for a detailed analysis of the information.

The following verbalizations illustrate professors´ opinions on the current situation regarding the students´ vocabulary range and the availability of bibliography for teaching/learning and assessing vocabulary.

Table 2. Verbalizations of the professors

	Categories	Verbalizations
1	Evaluation of the students´ current vocabulary	*"They all present a vocabulary range according to the level they are supposed to have; however, they are easily satisfied with the vocabulary taught and do not try to improve it."*
2	Expectations regarding the students´ vocabulary range by the end of the course	*"Since the English taught is for communicative purposes we do not expect the students to have a specialized vocabulary but just to know the basics for communication in formal and informal situations."*
3	Opinions about the existence of a bibliography to teach and assess vocabulary	*"There is not enough bibliography to perform these activities. We have the Face to Face Series in speaking; however, it keeps recycling the same vocabulary and add just two or three mew words here and there."*
4	Methods and techniques used to teach and assess vocabulary	*"Systematic evaluation and the establishment of more demanding objectives; but we need to take into account their current level in order to determine which methodology to follow."*
5	Suggestions in order to improve students´ vocabulary range	*The creation of a vocabulary database will be useful; of course, it should include some exercises and try to assess them in an interactive way. "* *"The new generations are very fond of technology. I think it should be a digital*

aid, maybe a platform, that would help students to learn and practice vocabulary. However, it cannot be taught in isolation, there must be a context; if not it would not be much different from a dictionary."

The interview to the professors and department authorities provided the researchers with the main tools to determine the importance of creating an app for enhancing students´ vocabulary range. The interviews also complemented the information given by the students in the survey. They also showed that the faculty and the department have well-prepared and qualified staff able to identify their own strengths and weaknesses and act accordingly in order to improve the teaching and learning process of vocabulary.

Summing up, the current bibliography is insufficient in terms of learning and assessing vocabulary. Moreover, all the skills do not emphasize on the same topics. The professors´ statements reaffirm the need of creating a digital aid in order to help students to enhance their vocabulary range taking advantage of the advance and use of technologies and specifically the use of mobile learning in the educational field. It would be more pleasant and fun for the students to learn using an app they could have access easily

Building the English Vocabulary app (EVApp) for enhancing students´ vocabulary range

From the needs analysis presented above, it was decided to design the vocabulary app in an attempt to meet students' needs and enhance the teaching and learning process. Therefore, **EVApp**, the English Vocabulary App was elaborated considering the theoretical framework presented, in addition to the results of the needs analysis.

EVA includes a wide variety of enriched texts taken from reliable sources such as the World Health Organization, WHO, and newspapers like The Guardian. Moreover, some of the vocabulary items are presented through pictures; technique which has proven to be more than efficient when it comes to recalling words. The pictures were also taken from reliable

sources like www.picturedictionaryonline.com, website sponsored by Merriam Webster and *The New Oxford Picture Dictionary* (1988). Regarding the exercises for assessing vocabulary, it needs to be said that they were designed on the students requests. The exercises do not limit the students to the simple activity of selecting the correct answer; but make them the responsibles of creating it, it is the same principle which underlies word games such as the hangman.

In order to create the app several platforms were consulted some of them were: Mobile Roadie, TheAppBuilder, Andriod Studio, AppMachine, Netbeans, etc. Finally, Android Studio was the software selected for creating the app. Android Studio is the official integrated development environment (IDE) for Android application development. It is based on the IntelliJ IDEA, a Java integrated development environment for software, and incorporates its code editing and developer tools. Among its features, it can be found template-based wizards to create common Android designs and components; a rich layout editor that allows users to drag-and-drop UI components, option to preview layouts on multiple screen configuration; an Android Virtual Device (Emulator) to run and debug apps in the Android studio and Lint tools to catch performance, usability, version compatibility and other problems.

For designing EVA, the researchers decided to take into account the principles stated by Wilbert O. Galitz in *The Essential Guide to User Interface Design, an Introduction to GUI Design Principles and Techniques.*

-Aesthetically pleasing

A design aesthetic, or visually pleasing composition, is attractive to the eye. It draws attention subliminally, conveying a message clearly and quickly. A lack of visually pleasing composition is disorienting, obscures the intent and meaning, and slows down and confuses the user. (2007, p.46)

Galitz states that this principle divides itself into two different components such as use of color and creation of groups; the last component will be explained in the home page description section.

Color

Many have been the studies concerning colors and their effects on

emotions. Although some authors have contradictory views in some aspects, they agree in others. For example, the color blue, the predominant color in the app, symbolizes peace, spaciousness and acceptance. When the human eye perceives blue wavelengths, it causes the body to produce calming chemicals. Moreover, people who are surrounded in a blue-colored environment are more likely to be flexible and serene; thus, they become more efficient at work. Furthermore, it has been proven that cool colors such as blue have positive intellectual effects; therefore, the researchers decided to select this color for the vocabulary app.

However, when designing an app, a maximum of three colors is allowed, regardless of the colors white and black, indispensable for the font color and other features. After reviewing some bibliography, the researchers decided to incorporate the color red highlighted by a black background. This decision was made after analyzing the acceptance of certain colors combinations which figures in *Programming the user interface: principles and examples* by Brown and Cunningham.

-Clarity and Familiarity

In both principles, Galitz defends that the interface must be clear in visual appearance, concept, and wording. Visual elements should be understandable, relating to the user's real-world concepts and functions (2007, p.51). Metaphors are the key elements to achieve them; however, they will be explained in the home page section.

-Efficiency and simplicity

Eye and hand movements must not be wasted. One's attention must be captured by relevant elements of the screen when needed. Sequential eye movements between screen elements should be predictable, obvious, and short. (p.56) In order to attain these principles eyes and hands movements were minimized, the interface was made as simple as possible maintaining a consistent layout, and the user´s wants and needs were anticipated whenever possible.

Description of the home page of the EVApp

The home page is the first displayed in the app and it evidences the application of the principles stated above. As it was mentioned the creation of groups and the use of

metaphors will be explained in this section.

-Creation of groups

The researchers decided to present the information organized into different categories. The vocabulary items will not be presented in a list format as most of the vocabulary apps do; instead they will be classified into the different topics which were identified in the needs analysis and presented in a context. Moreover, within each topic there are various subtopics which also include texts and vocabulary items related to them.

-Use of metaphors

Metaphors should be realistic and simple. Just from look at it, students can easily identify the topics the app covers without placing labels to identify them, which contributes to their visual learning and understanding.

The user has two options:

1- Select a topic and learn the vocabulary related to it, and then go to the exercises or,

2- Go directly to the exercises.

This page also provides a section up to the right, where users may search for specific information and customize the app.

Figure 2. Home page of the vocabulary app

Currently, the proposal of EVApp is in the stage of piloting implementation for further improvement of the contents before being given to the specialists for their evaluation.

CONCLUSION

ICTs are tools of the student-centered approach, which seeks to make of the professor a facilitator and of the student the center of the teaching/learning process. The application of mobile learning has proven to be beneficial for vocabulary acquisition and consolidation in foreign languages.

From the needs analysis concerning the availability of bibliography for learning and

assessing vocabulary, the results showed that there are some limitations regarding the amount of bibliography. Students and professors advocate the creation of programs of collaboration between faculties which could lead to the implementation of new technologies for attaining these purposes. Hence, the English Vocabulary App has proven to be a solution for this situation.

The EVApp contents were selected using a comprehensive approach; always taking into account the consistency of vocabulary in the different skills included in the syllabus of the subject English for Preparatory course. The app was created using the software AndriodStudio and following the principles stated in the research article. The texts and tasks were taken from reliable sources.

Although the EVApp is still in the piloting stage, the professors considered the proposal as a valid contribution for the improvement of students' vocabulary in the Preparatory course.

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