# Design of a smart application model for the teaching of a language in high school

# Diseño de un modelo de aplicación inteligente para la enseñanza de una lengua en secundaria

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**Abstract**

Access to learning in any context, inside and outside the classroom there is a great interaction of the users, breaking with the classic passive learning, allowing a substantial and effective learning in which the student becomes an active participant. The great popularity of mobile devices among young people of all ages means that educational applications have a positive influ-ence on student motivation since they have an im-portant playful component allowing learning through play. ENGLISHTEC pioneering project in the design of a mobile application for the teaching of the English language, ad hoc to Secondary Education in the East-ern Zone of Michoacán. Case study Technical Sec-ondary 49 Samuel Ramos. Initiating the insertion of mobile applications in the classroom, which is a re-source used by students in their daily lives, becoming an educational tool, enhancing their learning, in addi-tion to allowing participation and social inclusion in any context, promoting identity and culture inclusive in our Mexico society.

**Mobile application, Learning, Inclusion**

**Resumen**

Acceder a un aprendizaje en cualquier contexto, den-tro y fuera del aula se produce una gran interacción de los usuarios, rompiendo con el clásico aprendizaje pasivo, permitiendo un aprendizaje sustancioso y efi-caz en el que el estudiante se torna un partícipe activo. La gran popularidad de los dispositivos móviles entre los jóvenes de todas las edades hace que las apps educativas influyan positivamente sobre la motivación del alumnado ya que cuentan con un importante componente lúdico permitiendo el aprender jugando. ENGLISHTEC proyecto pionero en el diseño de aplica-ción móvil para la enseñanza del idioma inglés, ad hoc a la Educación Secundaria en la Zona Oriente de Mi-choacán. Caso de estudio Secundaria Técnica 49 Sa-muel Ramos. Iniciando la inserción de las aplicaciones móviles en el aula, que es un recurso utilizado por los estudiantes en su cotidianidad, convirtiéndose en una herramienta educativa, potencializando sus aprendizajes, además de permitir la participación e inclusión social en cualquier contexto, fomentando la identidad y cultura en una sociedad incluyente en nuestro México.

**Aplicación móvil, Aprendizaje, Inclusión**

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## Introduction

Due to globalization and incorporation of technology in organizations, it has broken the distance barrier, therefore, be able communicating in another language has become in a key competency to excel in the labor, social and cultural market.

According to Rodríguez, R. (January 27, 2015), Mexico, 97% of the students who graduated from high school and currently are in high school are failing in the knowledge of English, 79% of students completely ignore the language, so I know has had to invent the A0 level that reveals the deficiencies in the teaching of the language in public tails that the Sorry study concludes, carried out by the organization Mexicanos Primero in 2015. The incorporation of the Technologies Information and Communication Guidelines (ICT) in society and, especially, in the field of education, has become increasingly important importance and evolution in recent years in the Teaching learning process. The use of mobile device applications also also called "Apps", it offers an infinite number of benefits Apps are software applications specifically designed, offering a solution or determinate function for a problem, apps are installed on smartphones and tablets, since in these times both years, youth and adults have at least one smart phone. Many applications mobile cations are becoming hereditary key tools for teaching-learning of the students.

Due to this, in our country mobiles are a work tool, which makes learning more flexible, since they can learn at any time, place and at their own pace. The project will allow the development of intellectual capacities in the application of information technologies in young people in this language (English), both in academic aspects medical, working, business and recreational you. The application will enter the eastern region of the state of Michoacán through SecondaryTechnique 49, Samuel Ramos. The intent of the mobile app design is to give an overview of how it is possible to teach nowadays with the new skills (capacities, skills) and new tools a new language.

In public secondary education they suffer from ICT tools that contribute to the process of teaching learning, High School Technique 49 "SAMUEL RAMOS" by Zitácuaro Michoacán in its vision of growth in the basic level student training support (secondary) identifies that it is important to incorporate to improve TIC. The mobile application responds to the need and impact of knowing and managing a language like English.

## Hypothesis

The use of an ad hoc mobile application to educate public secondary education supports education - learning a language.

*Specific hypotheses*

Through a Scrum method of development of software, it is feasible to develop an Application Mobile on ANDROID for teaching-learning learning a language.

The use of the Mobile Application in AN- DROID for language teaching-learning, allowing secondary education students to it would be public in learning the language of according to their daily life

Dependent Variable: Tool for entering teaching-learning a language secondary level would give.

Independent variable: Mobile Application in ANDROID for teaching-learning.

The intention of creating the application mobile is to give an overview of how it is possible teach today with new capabilities, skills and new tools.

## Methodology to be developed

The type of study implemented for the project to be descriptive, cross-sectional and technological development, transversal since TIC has a foray across the education, it is a tool that play a substantive role in the generation, interchange, dissemination, management and access to knowledge I lie (Cobo, R. 2009, p. 312).

The mobile application has a limited time estimated time of six months and the schooling are focused to develop for 3 years. For the basic requirement pedagogical information is necessary and there will be teachers from the English area high school as well as students of different grades, 12 students. It was chosen for reinforcing research with the focus qualitative, by showing the improvements with respect to with regard to the methods normally used in the classrooms with the student group before, the quality of the different materials and the availability of these as a key factor to be able to contrast the benefits of the application against traditional methods implanted in traditional classes, likewise combine it with the quantitative approach, by indicating according to a series of surveys carried out the relationship between different variables and show improvements or problems based on the collected data, to analyze changes in the target population when interacting with the application.

The methodology to be used for the development of the mobile application will be SCRUM since provides to maximize the construction of the functionality of the object to be developed through of iterations with the customer, streamlining functional or priority changes without any trouble. Promoting motivation, compromise and innovation.

Instruments and equipment. For the data collection validation are used two techniques: the survey and the interview. Poll. The development of two input formats costs, the first focused on students, it will be multiple choice and grading scale which will be easy to understand. The second in the same way it will have a name specific and will be multiple choice, this will be designed for teachers.

*Interview*

It is important since the implica two as: principal, secondary school teachers secondary school and facilitators will be interacting for improvement and productivity to give the best solution in the educational field, to all those Students who have difficulties with considerable and potentiate the skills of students who do not present difficulties.

*Procedure*

It is basic to divide the carrying out of the development of this project:

Conceptual:

The English language is the most widely spoken in the entire world, because of that it has been called universal language, providing benefits.

Identifying elements for level one. High School English

- Present Simple.

- Past Simple.

- Verb to be.

- Passive voice.

- Present Progressive.

- Past Progressive.

- Present perfect.

- Some / Any.

- Verb can.

- There is / there are.

- Possessive pronouns.

- Will / going to.

Software engineering is made up of a process, a set of methods (practices) and an array of tools that enables professionals develop computer software high quality An essential element in the management tion of software project.

Analysis:

With the results obtained in the surveys applied to the teachers and the meetings with the director, important information was generated in addition to many aspects to be evaluated, for example: the best way to distribute the information in the application.

Once the information is obtained and the main problems to be solved, such as: lack of vocabulary, problems with the topics according to the program, lack of knowledge of the verbs in their 3 forms, lack of practice, the time is not adequate, no all students learn at the same pace, lack of didactic material, lack of practice of the topics seen by the students. As well as the scarce application of tools or didactic material for the teaching-learning process.

Design:

It was chosen to work with Android since most of the people in the country have this operating system on their smart devices. According to the requirements analysis, the categorization of the main topics in the application was generated, that is, the conclusion was reached of integrating the following aspects:

- Vocabulary.

- Verbs in their 3 forms.

- Didactic learning area (game).

Learning area which consists of the topics of the curriculum according to their level with their corresponding examples, exercises and at the end of each unit there will be an exam to reinforce the learning obtained from each topic in each unit.
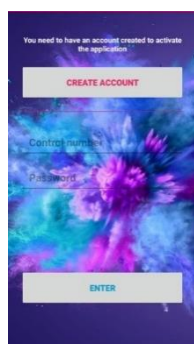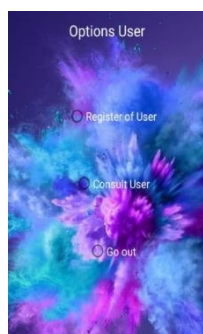


**Figure 1** User account creation
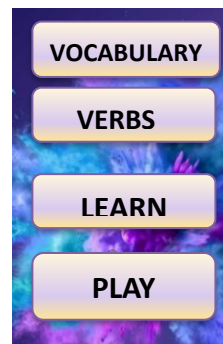


**Figure 2** User account option

**Figure 3** User options menu

In these images we can see the design that was presented to the teachers and students, who agreed and gave the go-ahead to later be able to carry out the programming of the mobile app.In addition to the corresponding tests of the application, that is, the testing of The application will be carried out on the DeployGate platform since its main function is the distribution of applications for the registry of errors that may arise.

Development:

To carry out the development of the project, it was necessary to program in Android Studio which is handled by the Java programming language. Scrum is a very simple software development methodology, because it is not based on following a plan, but on continuous adaptation to the circumstances of the project's evolution. As an agile method:

- It is an adaptive development mode, rather than predictive.

- Oriented to people, rather than processes.

- It uses the incremental construction model based on iterations and reviews.

It shares the structural principles of agile development: starting from the concept or vision of the client's need, it builds the product incrementally through brief iterations that comprise phases of speculation - exploration and review. (Palacios, J. & Ruata, C.)

The programming was done by modules such as:

- User Registration.

- Consultation and modification of users.

- Login.

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-     Vocabulary.

-     Verbs.

  -     Irregular verbs.

  -     Regular verbs.

-     Learn. When accessing the unit, the topics and the exam will be displayed, when selecting a topic, the following options will be displayed:

  -     The subject and its grammar.

  -     Exercises on the topic.

This is how all units (I, II, III) are handled.

In the option where the units are shown, the results option is also shown, in which the results obtained from each exam performed will be given, the information will be stored in the BDD.

-     Game.-In this module a menu was created, which contains the following options:

  -     Animals.

  -     Verbs

  -     Colors.

  -     Fruits.

-     Talk.- The talk module contains a menu with the following options:

  -     School.

  -     Family.

  -     Colors.

  -     Greetings.

These categories are integrated into the vocabulary in order that students / users can listen to the pronunciation of words and test their ability to retain words and increase their vocabulary (pronunciation).

Access to any menu option, the words with which you can be practicing will be displayed, once the microphone button is pressed, you can pronounce the word of your choice and the pronunciation will be correct or incorrect.

Finally, a message is sent to the user where they are told if their pronunciation is correct or not.

-     Information.- This module shows the technical information of the application, that is, the name of the programmer and the image credits used in the application.

*Tests*

Once the mobile application is located in Deploygate, you should leave a few days to be making daily reviews of the application, in case an error is generated, have knowledge of it and be able to correct it in the same way, if there were no errors, be sure that it worked in the expected way, obtain the statistical data of downloads.

*Implementation*

The implementation of the mobile application called Englishtec was done through DeployGate, since this platform is for the distribution of applications in order to do tests and thus generate the corresponding reports of if we obtained any error, to be able to correct it and if none was obtained then now if you distribute it safely in a Market Pay Store and it is free to students.
Tools to use

For the development of this project it is necessary to use the following equipment and instruments: NetBeans IDE 8.2, JDK 8u111 with NetBeans 8.2 - Oracle, JDK., Android Software D, Windows 10 Professional 64 bits.

**Results**

The results were obtained by surveying 30 high school students of different grades (due to the pandemic), after having used the ENGLISHTEC application.

The results are presented.

**What kind of level of English do you have?**
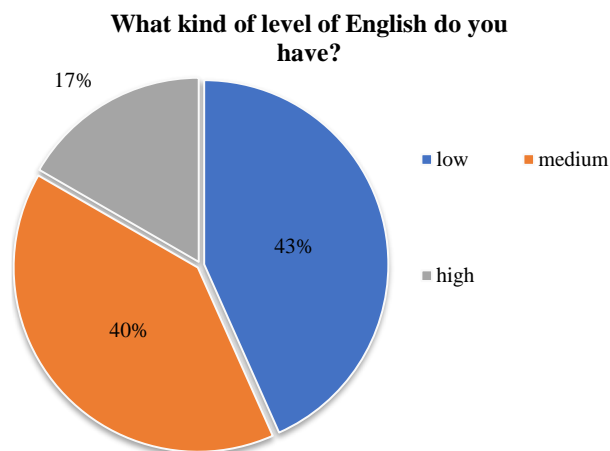


**Graphic 1** English level of secondary school students

In graphic 1 we can see that 43% of students consider themselves to have a low level of English and 40% to have a medium level, our area of opportunity is in the low and medium level (83%) for the use of the smart application.

**Low performance reasons**
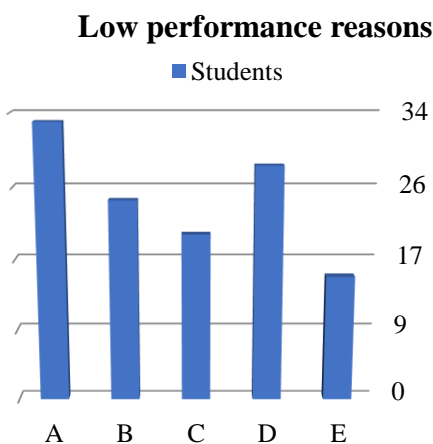


**Graphic 2** Reasons for low performance in secondary school students

Graphic 2 shows the written statements of the interviewed students giving the following reasons for their poor performance:

A.    They only do it during the face-to-face class.

B.    It is not flashy for them to study after class.

C.    They do not understand the topics without guidance.

D.    Lack of review exercises.

**How often do you study english per week?**
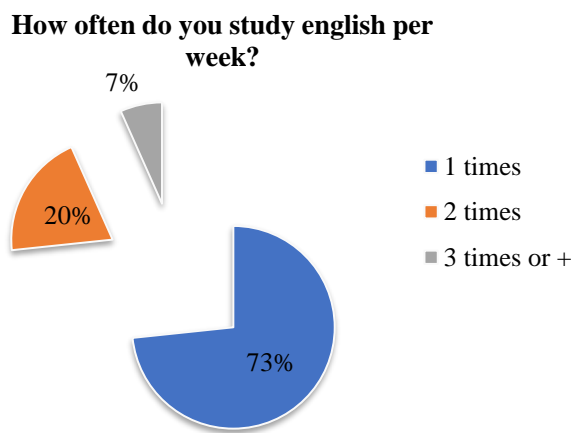


**Graphic 3** Percentage of study per week by students

The number of times between 1 and 2 gives us 93%, a percentage that gives us the opportunity for the intelligent application to support them in learning the language.

**Would you use an app as a tool to learn high school English?**
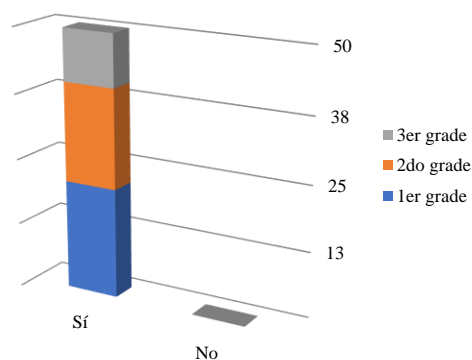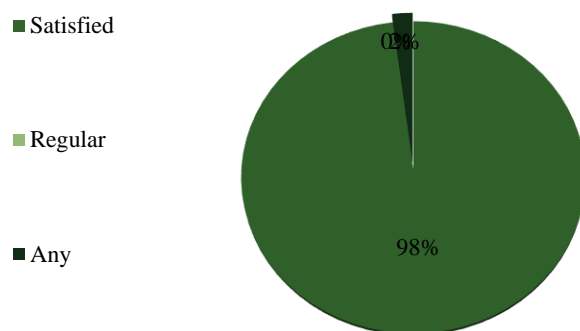


**Graphic 4** Acceptance of the use of an app p at the secondary level

Acceptance of the use of a mobile application is total on the part of high school students.

The previous results were obtained in the requirements phase.

**Does the application satisfy your need?**



**Graphic 5** Satisfaction in the use of EnglishTec

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As can be seen in graph 5, the number of students who answered their satisfaction of their needs to know, handle the smart application, giving 98% that they say they are satisfied and only one person said they are not satisfied because they wanted them to have more exercises.

**Do you think that with EnglishTec you can increase your level of English?**
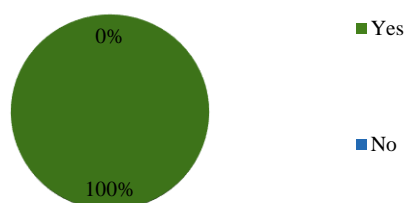


**Graphic 6** Percentage of students for the use of EnglishTec

It is pleasant to know the statements of the students, since they gave a 100% yes for the following: having and continuing to use EnglishTec at any time and place as a tool that facilitates the review since it is attached to the study programs of their school and learning a language motivates its use.

**How do you consider the topics covered by the application?**
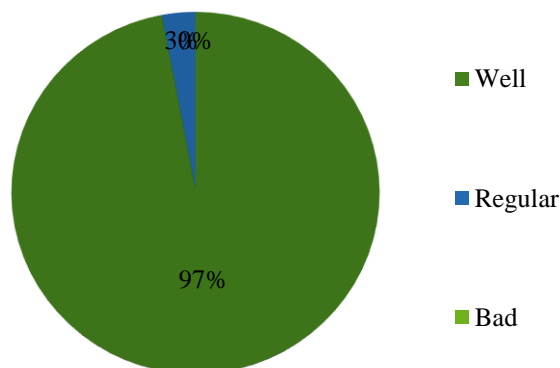


**Graphic 7** Consideration of the students on the topics in EnglishTec

With respect to the topics used in the application, 3% of students declared regularly, verbally arguing that they would like it to have more topics from the official ones, and 97% registered that the way of covering the topics was good due to the support for reinforce what was seen in class.

**How do you consider the didactics of the topics in the application?**
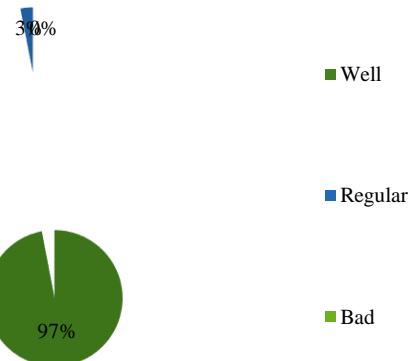


**Graphic 8** Didactics of the topics in EnglishTec

The teachers answered regarding the didactics of the topics used in the application, 3% stated in regularity, verbally arguing that they would like it to have more images and 97% that it was good for the support to reinforce what was see in class
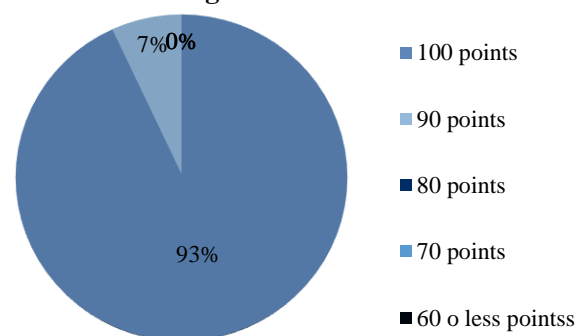
**What would your qualification be for EnglishTec?**
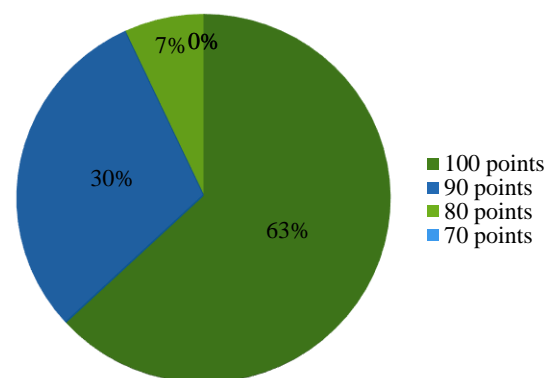


**Graphic 9** Evaluation of EnglishTec by students

For this question, 63% of students, stating that it was very viable for the task of learning the language, 30% gave 90 points because they want more images and 7% gave 80 points because they have a more advanced level.

**What would your qualification be for EnglishTec?**



**Graphic 10** Evaluation of EnglishTec by teachers

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With the teachers, 93% found it suitable for the task, and 7% of the teachers found it excellent, but that more activities were added.

## EnglishTec in the following format
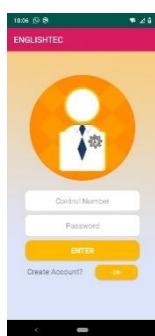


**Figure 4** EnglishTec Main Screen



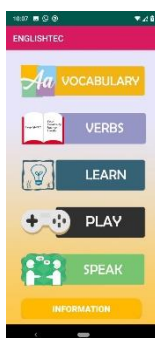**Figure 5** EnglishTec registration screen



**Figure 6** EnglishTec menu screen



**Figure 7** EnglishTec exam screen

## Conclusions

We can conclude with the statement that a mobile application ad hoc to secondary education is a powerful tool for the teaching-learning process. Accepting EnglishTec in the process not only satisfies the first year of high school, but the other grades as well. The use of technology as a didactic tool is important, to promote the development and knowledge of students, current generations have a very high degree of demand to capture their attention, technology gives us that possibility and in a playful way to teach and learn, generating a positive impact on the training of students.

The ENGLISHTEC tool helps to get to know and learn a new language, improving school, cultural and living conditions. The impact of EnglishTec, led to the acceleration of the web page creation process for Technical Secondary 49, in which an instructional design can be added (it is in the design phase) and that its student community as well as society must be informed of Truthful and timely manner, giving rise to the social inclusion of young people in a diverse way with valid tools, as well as educational processes that allow to support and strengthen the training of students at the secondary level.

Versions will be created for both second and third grade high school.

Future lines of research

Mobile technology for learning:

Physical

All these from thematic units of the SEP high school level.

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