

Methodology for Learning the Asháninka Language using the Mobile App

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Abstract

This article presents the methodology used to develop an application for learning the Asháninka mother tongue, the methodology used is that of mobile-D which has the phases of: exploration where the necessary requirements were carried out to apply and study the language; initialization, the stabilization of modules is carried out, the modules to work in the application are carried out; Production stabilization and testing development process is explained. In the development section it is explained in android, basic modules such as (writing, listening and speaking) are presented for the user to interact, in addition the dictionary section is presented so that they can look up the words and increase their knowledge. The results were favorable in version 1, in the basic part, the functional test was carried out where it was determined that the application is usable in version 1.

Keywords 1

Tongue, application, ashaninka, learning, evaluate

1. Introduction

Revalue our native and cultural languages of our country, so that they do not lose and continue to remain, as one of the languages that exist in our territory. Over the years, many native languages have been lost, and the number of people who speak their language from an early age is decreasing.

UNESCO presents the map of the indigenous languages of Peru in danger of extinction, of the 48 indigenous languages of the country, 21 are in danger of disappearing, in addition 40% of the world population do not have access to education in their mother tongue as well These languages are divided into two groups: those that are in danger of extinction and those that are seriously in danger.

The endangered languages spoken by Unesco are Bora, Murui-Muinami, Yagua and Yanasha, and the 21 languages that are seriously endangered are spread over the regions of Loreto, San Martín, Huánuco, Pasco, Junín, Lima, Ucayali and Madre de Dios [1].

According to Edgar Gutiérrez, Isaac Ocampo (2019). In the Warma Research: mobile application for the learning of mathematics and language in educational institutions of the Quechua-speaking communities in Ayacucho aims to improve the teaching and learning of language and mathematics for children of initial education of Quechua-speaking populations of Ayacucho from the use of mobile technologies. Among the results that have been obtained from this project is that initial education children have digital educational instruments with content adapted to the Ayacuchan reality, which favor the learning of language and mathematics in the mother tongue of their parents, being accessible from any community Quechua speaker.

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This research helps children who speak and understand Quechua to learn mathematics and communication language, this helps to reduce the weakening of the Quechua mother tongue as well as to have the cultural identity of the Andean populations [2].

In the book *Toponymy in the Great Pajonal*, Ashaninka is an Arawaka language that also presents many linguistic variables, which has generated at first, that some authors postulate different classifications many times giving the name of language to what is considered today as a variety.

The Ashaninka has many linguistic variables, for example the Ashaninka of the Chanchamayo Valley and the Ashaninka of the Mantaro Valley (Ene), these two valleys have Ashaninka, but it is spoken in a different way in some words [3].

In the book *Artificial Intelligence 101 Things You Should Know Today* explains the main approaches to artificial intelligence that it is an aspect of computing that computers have the ability to learn without being programmed for that purpose.

New technologies such as Machine Learning are on the rise and are becoming more effective in the learning process and today artificial intelligence is moving everywhere, whether in work, health, environment, studies, etc. [4]

An Intelligent Virtual Agent Applied to an Educational Environment has a knowledge domain that corresponds to the agenda of an academic task in order to interact with the student and resolve doubts about the course.

The chatbot is an intelligent agent that helps mobile applications and web pages, to have more information about the service or product that the company offers, we are going to implement this chatbot in the mobile application to help the user's frequently asked questions [6]. The model of the Bilingual Intercultural Education System (MOSEIB) that is applied in the areas of Ecuador aims to verify the model of the Education system, which was processed through a survey built based on the evaluation criteria, the analysis was supported with the legal theory reaching the conclusion that the application of the model is good in 53%, 18% in a very good level and the rest of the regular and deficient levels since there are limitations in ancestral knowledge.

The MOSEIB is a model with which we must guide ourselves for the valuation of indigenous languages since they are guided by the legal theory that handles Intercultural Bilingual Education [7].

Applications for language learning for the University of Murcia presents the research that its purpose was to know the use made in the university environment of mobile devices as well as the applications they use in foreign languages subjects, the results show that the applications are adequate tools for language learning.

This app that was implemented for language learning at the University of Murcia helped and it was shown that these mobile tools, if they are suitable for learning foreign languages, can also be used by university and non-university students [8]. In VISP Design and Evaluation this is a mobile application for the practice of oral competence helping students in their Idiomaticity of foreign languages, asking students to make an audio of an authentic communicative task, the data obtained in this investigation is that they allow to outline the theoretical and pedagogical framework in which the application can be framed.

The VISP application helps students who study the English foreign language to improve their speech by uploading an audio description to the platform for each task left in English class and thus helps to use this application in the distance education that we are passing now [9]. In the use of mobile applications for learning a foreign language, data collection tools were used that allow them to identify and determine the use that users currently have of applications developed specifically for learning a foreign language, as well as the results obtained. allowed to determine that nowadays more

people have access to smart mobile devices and with them applications developed for this type of purpose the learning of foreign languages.

It is implied that mobile applications help a lot in aspects of life, for example in health, education, so we must look for mobile applications to learn foreign languages or native languages to value and learn each language [10]. For this reason, a mobile application has been developed to learn this language. This technological tool will help new generations learn this language and not lose the language. This mobile application helps to improve grammar and oral skills to make learning this language more fluid.

2. Materials and Methods

2.1 Analysis of the Entity's requirements:

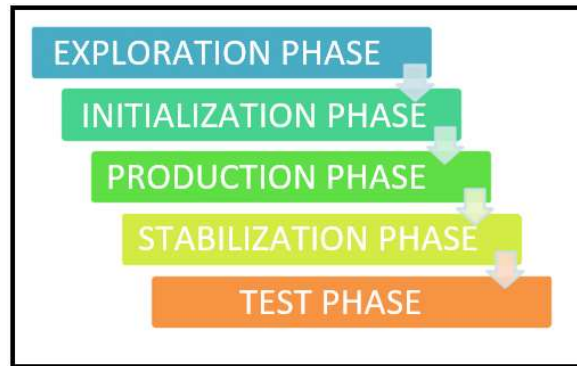


Figure 1: Phases of the language application development methodology ashaninka

- **Exploración:**

In this phase, the requirements that the application needs are investigated for this, references are sought that must be included in an application to learn a foreign language and language such as speaking, listening, understanding.

Table 1 describes the requirements that the user needs for a good learning of the Ashaninka language and which modules should be integrated into the development process.

Table 1: User Requirements

NUMBER	REQUEST
01	User registration by email or Facebook
02	Show modules to learn vowels, alphabet, numbers, animals, colors, greetings, the human body, family, etc.
03	Rectangular figures appear in each module and the vowels in Spanish and Asháninka are written below, as are the numbers and so on with all the modules.
04	Likewise, when they press on the rectangle a voice is heard that repeats what is written that represents the pronunciation in Ashaninka
05	Also, for them to practice pronunciation there will be a module where it will be pure audio and users have to leave their audio to be qualified
06	You will have a chatbot for any query that have the user

07	There will be videos that teach basic dialogue
08	There will be a quiz option before using the app and after using the mobile app.

Table 2: System Requirement

Requirement for Development	
n°	Requirement for development
1	2 GB of disk space for Android Studio, 4GB recommended (500MB for IDE and at least 1.5 GB for Android SDK, emulator system images And caches).
2	windows operating system
3	Sqlite, firebase
4	visual studio
5	0001 web for services
6	android cell phone
7	The Java Development Kit (JDK)

- **Initialization**

In this second phase we begin to carry out the corresponding modules for vowels, alphabet, natural numbers, greetings, colors, family, human body, etc.

The following Table 2 specifies the vowels that enter the Ashaninka language, which are 4 vowels a, e, i, o, as we know in the Castilian alphabet the five vowels a, e, i, o, u are used in the asháninka only uses 4 vowels.

Vowels

Table 3: The Vowels

Vowels	Ashaninka
a	a
e	e
i	i
o	o

Table 4 describes the alphabet they use in the Ashaninka language, in this Ashaninka language they only use 19 letters, in table 3 it is written in Spanish and in Ashaninka.

Alphabet

Table 4: Alphabet

Alphabet	Ashaninka
a	a
b	ba
ch	cha
e	e

i	i
j	ja
k	ka
m	ma
n	na
ñ	ña
o	o
p	pa
r	ra
s	sa
sh	sha
t	ta
ts	tsa
ty	tya
y	ya

Table 5 describes the natural numbers from 0 to 10 written in Spanish and Ashaninka.

Natural Numbers

Table 5: Natural Numbers

Numbers Ashaninka	
0	tecatzi
1	apani
2	apite
3	maba
4	otsi
5	koni
6	iko
7	tson
8	tsoti
9	tin
10	tsa

Table 6 describes the greetings are written in Castilian and Ashaninka.

Greetings

Table 6: Greetings

Greetings Ashaninka	
Good Morning	Kitaiteri
Good Afternoon	Sheteneri
Good Night	Tseteneri
Hello	abiro
Bye	añabakaja
I'm leaving	jatanara
How are you?	¿Abirokaa?

What are you doing?	¿Paitaka pantsiri?
Thanks	Pasonki
Thank you all	Pasonki marooni
I'm 22 years old	Naka nosarensite pitetsapite
I live in the Pucharini native community	Noseiki Comunidad Nativa Pucharini
They live in the Pucharini Native Community	Isaikajetsi Comunidad Nativa Pucharini
My dad lives in the Pucharini Native Community	Apa iseiki Comunidad Nativa Pucharini
I study in college	Naka nestoriatsi Universidaki

Table 7 shows some colors in the Ashaninka language. In Spanish there are many more colors in this article, only some colors are presented in Ashaninka.

Colors

Table 7: Colors

Colors Ashaninka	
Brown	kamarari
Black	kisari
blue	potsitakiri
White	kitamarori
green	natsiriari
yellow	kitiriri
Red	kityonkari

Table 8 describes the genealogical tree of the family are described in Spanish and Ashaninka.

Family

Table 8: Family

Family Ashaninka	
Grandpa	api
Grandma	isha
Dad	apa
Mother	ina
Brother	lye (aari)
Sister	choki
Uncle	pabaini
Aunt	nanaine
Cousin	yaya

cousin	entyo
Nephew	chomi
Niece	shintyo
Son in law	notsinire
Daughter-in-law	nebatayiro

Table 9 shows the parts of the human body in Spanish and Ashaninka.

Body

Table 9: Parts of the Human Body

Body Ashaninka	
Hair	kishitsi
Head	lto
Expensive	iboro
Nose	ikiri
Eyes	iroki
Mouth	(ibante) Pantentsi
Tongue	inene
Tooth	aiki
Ear	noyempita
Neck	ikentsi
Arm	noshenpa
Chest	aspane
Belly	nomotsa
Knee	noyiyereto
Legs	nobori
Foot	ltzi

Presentation

Hello, good morning, my name is Jhasmin Castillo Camañari, I live in the Pucharini Native Community, I am 22 years old and I am studying Systems Engineering at the Scientific University of the South. My mother's name is Sume Camañari Camacho and my father's name is Mario Castillo Luis live in the Pucharini Native Community

Abiro, kiteiteribe naka nopaita Jhasmin naka noseiki Comunidad, Naka nosarentsite pitetsapite nostoriatatsi Unversidaki Científica del Sur Ingeniería de Sistemas

- **Production:**

In this phase the steps for the production of the mobile application are explained, in figure 2 are the steps that we must follow in the development process of the mobile application to learn the Ashaninka language.



Figure 2: Steps for the production of the mobile application.

- **Planning**

We must make our schedule to have knowledge of what activities we must carry out every day, also know our roles and that we must fulfill our tasks and always update the schedule since there will always be inconveniences in the process of preparing part of the architecture of the project, we must also always move forward with the documentation of how the project is being done.

- **Job**

Realization of the modules of the mobile application, making the images, and putting the letters and the audio so that it is more attractive for the users and does not seem boring, I carry out a virtual exam so that the user takes the exam after each session of class.

Likewise, figure 3 shows the architecture graph of the mobile application for learning the Ashaninka language.

As architecture: The Basic ViewModel architecture proposal made by google helps us to separate components by libraries, with which it is maintainable, and flexible.

In + MVC architecture
- Activity, Fragment, DB.

A service has been used for the application in the MVC model so that the information is in the form of a dictionary.

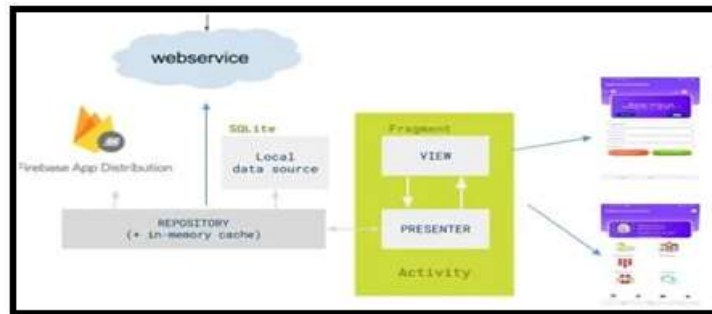


Figure 3: Ashaninka language mobile application architecture

- **Launch**

In this step of the production we are going to study how the launch of the mobile application will be so that it reaches more users and they know how to take advantage of it so that they learn new languages native to Peru, in its version 1 the Ashaninka language is presented with basic parts, used android studio.

- **Stabilization**

In this phase of the methodology, the integration of the entire developed system is carried out since we had it developed in parts, here everything is united to make it a single product and start with the documentation such as the user manual on how this application is used.

Figure 4 shows the two steps that must be integrated in the stabilization of the mobile application.

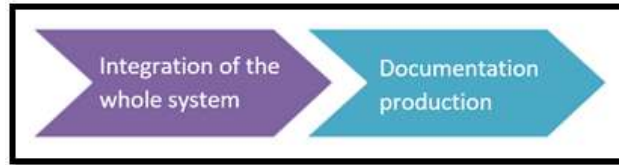


Figure 4: Stabilization of the mobile application

- **Integration of the entire System**

All the modules of the mobile application must be joined in the same to see the operation of the application and we must do the design tests if it is user-friendly, if it is flexible, quick to understand, know how it works. Likewise, generate a report indicating the failures and recommendations for the integration of the mobile application.

- **Documentation Production**

We must develop a User guide so that the user has the knowledge of how the mobile application works, how to register, how to take the evaluation, etc.

- **Design tests**

In this phase, the steps for the design tests to be applied are shown. Figure 5 represents the steps to follow to have good design tests.

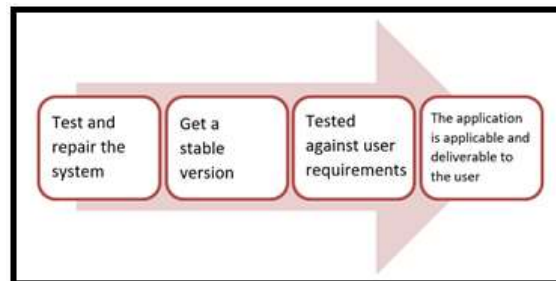


Figure 5: Steps for design testing

- **Test and repair the system**

In the first step we must do all the corresponding tests such as black box and white box audits, as well as the administrator, user and super user with these tests carried out we will find faults in the system and we must repair them before having a stable version of the application.

- **Get a stable version**

After making the corresponding tests of the system and they have been repaired, we are going to obtain the first version of the application and then do the tests with the user's requirements.

- **Tested with user requirements**

After obtaining a stable version of the mobile application, we must test with the requirements obtained by the users so that the application is approved and improve if some of the requirements are missing or badly done and thus have a version 2 and will have more versions of the application.

- **The application is applicable and deliverable to the user**

After improving the application with user tests, we have a final application that is applicable and can be delivered to end users who need or want to learn the Ashaninka language, which is an original language of Peru and thus not lose the original culture and customs. .

- Design

In research work, the methodological design is pre-experimental since it is a non-experimental research design technique that helps researchers to establish a relationship between the two variables. This is of the applied type since its main objective is that it is based on solving practical problems. The approach is qualitative since it is applied to any field of research and it studies the externally investigated subject trying to achieve maximum objectivity. The population we take for the research is from the Pucharini Native Community, it is in the Perené district, Chanchamayo Province, Junín department. In the Pucharini Native Community there are around 800 people, counting children, young adults and the elderly. From this population, 30 people will be sampled who are considered users of the mobile application. The amount of sample we obtained was random as all people aged 14 to 45 years are chosen.

- Evaluation

At this stage we will use the direct observation sheet to help us at what level of the Ashaninka language you are at. First of all, we are going to take a written exam with about 100 questions in addition to taking the oral exam with a presentation in the Ashaninka language and that says the greetings numbers and some colors the alphabet, in addition to its presentation in Ashaninka and that it sings a song, Let him say the numbers in Ashaninka, the colors, the human body, etc. An example of the written test is shown in Figure 6.

1. LA HISTORIA DE MARANKIARI BAZO- LLOS. PRIMEROS POBLADORES VIÑEROS DEL LUGAR DE KIMARIARI. A. EL AÑO 1966. B. EL AÑO 1939. C. EL AÑO 1998. D. EL AÑO 1935. E. EL AÑO 1997.	12. SU JEFE DE LA CC.NN. A. VICTOR ARCE SANTOS. B. MARCO ARCE YUMANGA. C. ELIAS CALER QUINCHOBI. D. CHEFFI DELGADO MISHARI. E. N.A.	VI. LAS PARTES DEL SER HUMANO: F / EL
2. EL NOMBRE DE MARANKIARI FUE DAIDO POR: A. PAULINO SHIROBA. B. LAZARO PAREDES. C. MIGUEL LOPEZ. D. SULO A Y B. E. N.A.	13. DELEGADO DE RELACIONES INTERNACIONALES. A. OSBALDO ROSAS RODRIGUEZ. B. BINO EUSEBIO CANTRO. C. SEXTO SALLCEDO SALLCEDO. D. SULO A Y B. E. N.A.	25. SU PEE. A. ITZI. B. ITZI. C. ISAYE. D. ITSOBI. E. N.A.
3. MARANKIARI FUE RECONOCIDO COMO COMUNIDAD NATIVA. A. EL AÑO 1966. B. EL AÑO 1964. C. EL AÑO 1976. D. EL AÑO 1994. E. EL AÑO 1979.	14. SECRETARIO DE EDUCACION. A. SEXTO SALLCEDO SALLCEDO. B. SAUL QUINCHOBI SALAZAR. C. VICTOR ARCE SANTOS. D. MANUEL OLINDOZES SALAZAR. E. N.A.	26. SU RICHILLA. A. INEHE. B. FORTICO. C. INAA. D. ISHBI. E. N.A.
4. SE ELIGE EL PRIMER JEFE DE LA COMUNIDAD. A. EL AÑO 1979. B. EL AÑO 1966. C. EL AÑO 1988. D. EL AÑO 1976. E. EL AÑO 1979.	15. PRIMER PERSONA. A. AARA. B. NAKA. C. IRINTAPAYE. D. IRONTAPAYE. E. N.A.	27. SU CHELLO. A. IBANTE. B. ISBI. C. ITSO MONTE. D. KUNTE. E. N.A.
5. EL PRIMER PROFESOR. A. LAZARO PAREDES. B. MIGUEL LOPEZ. C. PAULINO SHIROBA. D. MARIANO CHANSA POMA. E. N.A.	16. SEGUNDA PERSONA. A. NAKA. B. AARA. C. IRINTAPAYE. D. IRIBORA. E. N.A.	28. SU OBI. A. ITAMAROKI. B. ISBI. C. ISHBI. D. INEHE. E. N.A.
6. DEJARON UN PUEBLO INHABITADO. A. KIMARIARI. B. MARANKIARI. C. MARANKI. D. PERENE. E. N.A.	17. TERCERA PERSONA. A. IRINTA / IRONTA. B. IRINTAPAYE / IRONTAPAYE. C. NAKA / AARA. D. IRIBORA. E. N.A.	29. SU LENGUA. A. INEHE. B. ITSOBI. C. ISBI. D. ISHBI. E. N.A.
7. RECORDARON EN COMPRAR EL TERRENO DE LA COMPANIA. A. PAULINO SHIROBA. B. MARIANO CHANSA Y PEDRO PAULINO. C. MIGUEL LOPEZ Y PAULINO SHIROBA. D. LAZARO PAREDES Y PEDRO PAULINO. E. N.A.	18. TIEMPO DEL VERBO: PRESENTE / IEE. A. SANKE NARENTE. B. SANKE NARENTE. C. SANKE NARENTE. D. SANKE NARENTE. E. N.A.	30. SU BOCIA. A. ISBI. B. IBANTE. C. ITSO MONTE. D. ITZI. E. N.A.
8. PARA LA COMPRA DEL TERRENO SE FUERON A TRABAJAR. A. PERENE. B. KIMARIARI. C. MARANKIARI. D. VILLA MARIA. E. VILLA MARIA. E. VILLA MORETI.	19. FUTURO / LEBRA. A. INCHARI. B. INANATERO. C. INCHATO. D. INEHE. E. N.A.	31. SU NARIZ. A. ITZI. B. INEHE. C. ITAMAROKI. D. ISBI. E. N.A.
9. TRABAJARON PARA EL PAGO DEL TERRENO. A. 29 TAREAS. B. 33 TAREAS. C. 30 TAREAS. D. 42 TAREAS. E. N.A.	20. PASADO / LEYO. A. ITSOBI. B. ISHBI. C. ITZI. D. INANATERO. E. N.A.	32. SU CARA. A. ITSO MONTE. B. ITZI. C. ITZI. D. ISHBI. E. N.A.
10. MARANKIARI ESTÁ COMPUESTO POR DOS TERMINOS. A. MARANKI - ARI. B. MARANKI - RI. C. MARANKI - IARI. D. MARANKI - KIARI. E. N.A.	21. BUENAS NOCHES. A. TSITENBI. B. KITEYTRIBE. C. SHETENRIBE. D. KITEYTRIBI. E. N.A.	33. SU PENE. A. INCHATO. B. ITO. C. ISHBI. D. IMAYE. E. N.A.
11. JUNTA DIRECTIVA DE LA CC.NN. JEFE DE LA CC.NN. A. OSBALDO ROSAS RODRIGUEZ. B. ELIAS CALER QUINCHOBI. C. SAUL QUINCHOBI SALAZAR.	22. BUENOS DIAS. A. TSITENRIBE. B. SHETENRIBE. C. KITEYTRIBI. D. SHETENRI. E. N.A.	34. SU CABELLO. A. ISBI. B. ITZI. C. ITSOBI. D. INTAINA. E. N.A.
	23. BUENAS TARDES. A. KITEYTRIBE. B. TSITENBI. C. KITEYTRIBI. D. SHETENRI. E. N.A.	35. SU BARRIGA. A. IBANTE. B. INTAINA. C. ITSO MONTE. D. SHETARI. E. N.A.
		VII. LAS PARTES DEL SER HUMANO: O / ELLA
		36. SU CAREZA.

Figure 6: Exam written in Ashaninka

OBSERVATION SHEET
DEVELOPMENT AREA: ASHANINKA LANGUAGE

Surnames and names:

Age:

Table 10: Observation Sheet

Activity	C	B	A	AD
Written				
Understand and answer animal questions well				
Understand and answer greetings questions well				
Understand and answer the colored questions well				
Understand and answer the questions of the human body well				
Understand and answer vowel questions well				
Understand and answer the alphabet questions well				
Understand and answer family questions well				
Understand and answer the number questions well				
Oral				
Presented appropriately in the Ashaninka language				
Properly pronounce the questions the interviewer asks you about greetings				
Properly pronounce the questions asked by the interviewer about vowels				
Properly pronounce the questions the interviewer asks you about the alphabet				
Properly pronounce the questions the interviewer asks you about colors				
Properly pronounce the questions asked by the interviewer about animals				
Properly pronounce the questions asked by the interviewer about parts of the human body				
Properly pronounce the questions asked by the interviewer about my family members				
Properly pronounce the questions asked by the interviewer about animals				
Sing a song in the Ashaninka language				

3. Results

During the study there were some cases of how we are going to evaluate our sample and we have carried out a written and oral evaluation test. With which we write it down in the observation file that has served as a necessary tool for our research work. As a result, we obtained that the architecture of the application helped users learn the Ashaninka language, as well as that, thanks to the user's interactivity with the mobile application, the main ones needed to learn a language such as the one were taken into account. writing, reading, speaking and listening, in the application worked well for the users and they learned the Ashaninka language a lot.

The usability of the mobile application is excellent as it is very flexible and well understood by the user.

For the development of the app, the technological tool firebase has been used, for the subject of the service a dictionary has been stored and a search for the words and their meaning in Spanish of the Ashaninka language has been stored.

Figure 7 shows the login to log into the mobile application.



Figure 7: Application Login

In figure 8 and 9 we will find an explanation of how the mobile application works.



Figure 8: Explanation of the mobile application



Figure 9: Explanation of the application

In figure 10 we find the main screen of which modules the Ashaninka language learning mobile application contains.



Figure 10: Main screen

In figure 11 we find the alphabet in the Ashaninka language, when the user clicks on the rectangle and an audio will sound repeating the letters and the word to refer to the pronunciation.



Figure 11: Alphabet

In figure 12 the greetings in Asháninka are shown, as in the previous one, when the user clicks on the icon of the drawings, an audio appears pronouncing the word they chose.



Figure 12: Greetings in Ashaninka

Figure 12 shows a list of the animals and how they are written and pronounced when they click on each of the boxes.

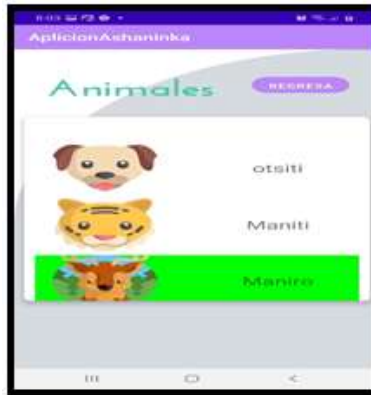


Figure 13: List of animals

Figure 13 shows the list of numbers, they also fulfill the same functions as all the modules.



Figure 14: Numbers

Figure 14 shows the human body module and continues to fulfill the same functions as the other modules.



Figure 15: Parts of the human body

An example of the evaluation of how it will be after using the mobile application is presented in figure 15.

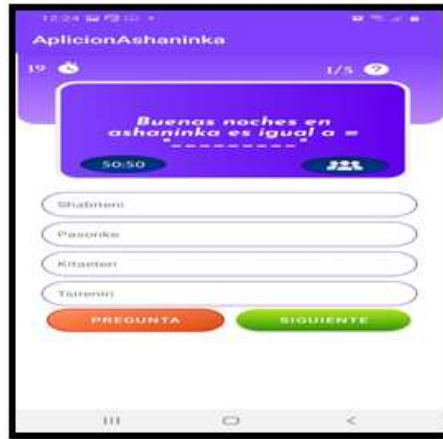


Figure 16: Example of the exam.

4. Conclusion

In conclusion that the methodology developed is adapted in the application as a tool for learning the Ashaninka mother tongue, being the application in its first version the implementation of basic modules has been carried out (human body, greetings, things, Numbers, videos, also the list of words with translations is shown, a questionnaire has been carried out to measure the learning level). The use of the non-relational database to manage the data of new users to manage the data entered about the Ashaninka language which uses a Json format to update it instantly.

5. References

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