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**THEME:**

**“INCIDENCE OF ERGONOMICS AND FURNITURE IN AN ENGLISH INTERACTIVE LABORATORY OF THE ACADEMIC UNIT OF ADMINISTRATIVE AND HUMANISTIC SCIENCES AT TECHNICAL UNIVERSITY OF COTOPAXI DURING THE ACADEMIC CYCLE MARCH 2012 – JULY 2012”.**

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## **APROBACION DEL TRIBUNAL DE GRADO**

En calidad de miembros del tribunal de grado aprueban el presente informe de investigación de acuerdo a las disposiciones reglamentadas emitidas por la Universidad Técnica de Cotopaxi y por la Unidad Académica de Ciencias Administrativas y Humanísticas por cuanto los postulantes:

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Con el tema de tesis **“INCIDENCE OF ERGONOMICS AND FURNITURE IN AN ENGLISH INTERACTIVE LABORATORY OF THE ACADEMIC UNIT OF ADMINISTRATIVE AND HUMANISTIC SCIENCES AT TECHNICAL UNIVERSITY OF COTOPAXI DURING THE ACADEMIC CYCLE MARCH 2012 – JULY 2012”**

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## **RESPONSIBILITY**

The criteria said in the present investigation “**INCIDENCE OF ERGONOMICS AND FURNITURE IN AN ENGLISH INTERACTIVE LABORATORY OF THE ACADEMIC UNIT OF ADMINISTRATIVE AND HUMANISTIC SCIENCES AT TECHNICAL UNIVERSITY OF COTOPAXI DURING THE ACADEMIC CYCLE MARCH 2012 – JULY 2012**”, are the authors responsibility.

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## **THESIS DIRECTOR'S ENDORSEMENT**

As the director of this investigation work about: **“INCIDENCE OF ERGONOMICS AND FURNITURE IN AN ENGLISH INTERACTIVE LABORATORY OF THE ACADEMIC UNIT OF ADMINISTRATIVE AND HUMANISTIC SCIENCES AT TECHNICAL UNIVERSITY OF COTOPAXI DURING THE ACADEMIC CYCLE MARCH 2012 – JULY 2012”**, of Andrade Morán José Ignacio and Cumbajín Parra Aracely Rocío, applicants of English career, I consider this investigative report contains the methodological and scientific requirements, those are enough to be evaluated by the thesis validation court that Honorable Academic Board from the Academic Unit of Administrative and Humanistic Science designs for its study and qualification.

Latacunga, July 2012

.....

**Msc. Lic. Edgar Encalada Trujillo.**

**THESIS DIRECTOR**

## **DEDICATION**

*My sincere thanks to my lovely mother Margarita, who with a great effort has guided my road and she never lets me fall down. My dear sisters Gabriela and Belen who have supported me in this period of my life with advices and love.*

*And lastly, to my Guardian Angels Jose Anibal and Favio Alejandro who with their blessings, they allow me waking up and fly away every single day. I love you so much.*

*José Ignacio.*

*Firstly, I acknowledge to God, and my mother Marina; who has been a father and mother and who has taught me that every work must be finished on time. Special thanks to my sweet husband Franklin, who with his patient and love permitted me to finish this career.*

*Especially, I would like to thank to my little son, Mateo. Forgive me, for leaving you in many times alone, so my life, my profession, and this thesis is dedicated to you in order to be the best mom.*

*Aracely.*

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*Also those friends and teachers who helped us to increase and develop all the skills into this beautiful and important language.*

*Our sincerely respect and admire for all of them.*

*José Ignacio & Aracely*

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## **ABSTRACT**

This investigation is part of a macro project known as “Implementation of an English interactive laboratory” which was carried out by students of seventh cycle of the English career at Technical University of Cotopaxi. This laboratory seeks to integrate new study habits in order to help students to develop and improve their English Language skills. The main function of the English laboratory is promoting the pupil’s interaction and improves the communication between teachers and students through the proper use of physical-sensory elements such as illumination, color, sound, space and furniture.

Ergonomics and furniture add safety and comfort requiring for students in order to reach the success of knowledge for this reason this investigation summarizes the importance of ergonomics and furniture in the academic environment in order to care the students and teachers’ physical health and avoiding corporal injuries, muscles disorders, mental stress, and myopia at Technical University of Cotopaxi. Ergonomics promotes to the mental, physical and social health of students and teachers taking into account their emotional scuffs while they transmit and receive knowledge. To carry out this investigation, the researchers used the descriptive research because it refers to real facts describing all its components, no experimental research because researchers made a study without manipulating the variables of the project and bibliographic research because it helps to determine existing and previous knowledge in a particular area. Also they applied surveys to students and teachers to know the witnesses and needs that they have at the time to learn and teach the foreign language. The English Interactive Laboratory was designed with quality standards which allow the teaching learning process to proceed with minimum stress and maximum effectiveness preserving the physical and psychological health of students and teachers.

## **RESUMEN**

Esta investigación es parte de un macro proyecto conocido como la “implementación de un laboratorio interactivo de inglés” y llevado a cabo por los estudiantes del séptimo ciclo de la carrera de inglés en la Universidad Técnica de Cotopaxi , el cual busca integrar nuevos hábitos de estudio a fin de ayudar a los estudiantes a desarrollar y mejorar sus destrezas en el idioma inglés. La función principal del laboratorio de inglés es promover la interacción del alumno y mejorar la comunicación entre el profesor y el aprendiz a través del uso adecuado de los elementos físicos sensoriales como son la iluminación, el color, el sonido, el espacio, el mobiliario.

La ergonomía y el mobiliario agregan la seguridad y comodidad requerida por los estudiantes a fin de alcanzar el éxito del conocimiento por esta razón la presente investigación resume la importancia de la ergonomía y mobiliario dentro del entorno académico con el fin de cuidar la salud física de los alumnos y evitar lesiones corporales, trastornos musculares, estrés mental, miopía en los estudiantes y profesores de la Universidad Técnica de Cotopaxi. Cabe destacar que la ergonomía promueve la salud mental, física y social de los estudiantes y profesores tomando en cuenta el desgaste emocional al momento de transmitir y recibir el conocimiento. Para llevar a cabo esta investigación los estudiantes utilizaron la investigación descriptiva porque se refiere a hechos reales describiendo todos sus componentes, investigación no experimental porque los investigadores hicieron un estudio sin manipular las variables del proyecto y la investigación bibliográfica porque determina el conocimiento existente y previo en una área particular. También aplicaron encuestas a los profesores y estudiantes de la universidad para conocer las debilidades y necesidades que ellos tienen al momento de enseñar y aprender el idioma extranjero. El laboratorio interactivo de inglés fue diseñado con normas de calidad las cuales permiten que el proceso de enseñanza y aprendizaje proceda con el mínimo estrés y la máxima eficacia preservando la salud física y psicológica de los estudiantes y maestros.

## **INTRODUCTION**

In Latin America the importance of an English interactive laboratory for teaching and learning aspects is great because it allows to teachers and students discover the language and many benefits as improve their English language skills. For teachers adequate places to teach their students in a comfortable and modern way and students increasing the concentration and efficiency of activities related to the English language learning. The majority of institutions as Schools, High Schools and Universities do not implement the ergonomics in their educational places because the implementation of this science is very expensive which forces to use any kind of furniture without taking into account the students and teachers' health and their future risks.

In Ecuador the importance of ergonomics and furniture in an English Interactive Laboratory is so essential because most Ecuadorian institutions look for the comfort of their students into the places where they are expecting to learn, preventing any kind of problem on their health as injuries or muscle disorders, for this reason they have applied property ergonomics and suitable furniture in order to their students feel safe and enjoy their classes especially where there are the necessary equipment to learn and develop the Language skills.

The authorities of Technical Univerisity of Cotopaxi want to promote a quality education throught macro projects in order that all carrers create different laboratories where students put in practice their knowledge there. In which the students of the English career have proposed to create an English interactive laboratory where teachers and students have facilities to learn this important language and transmit the

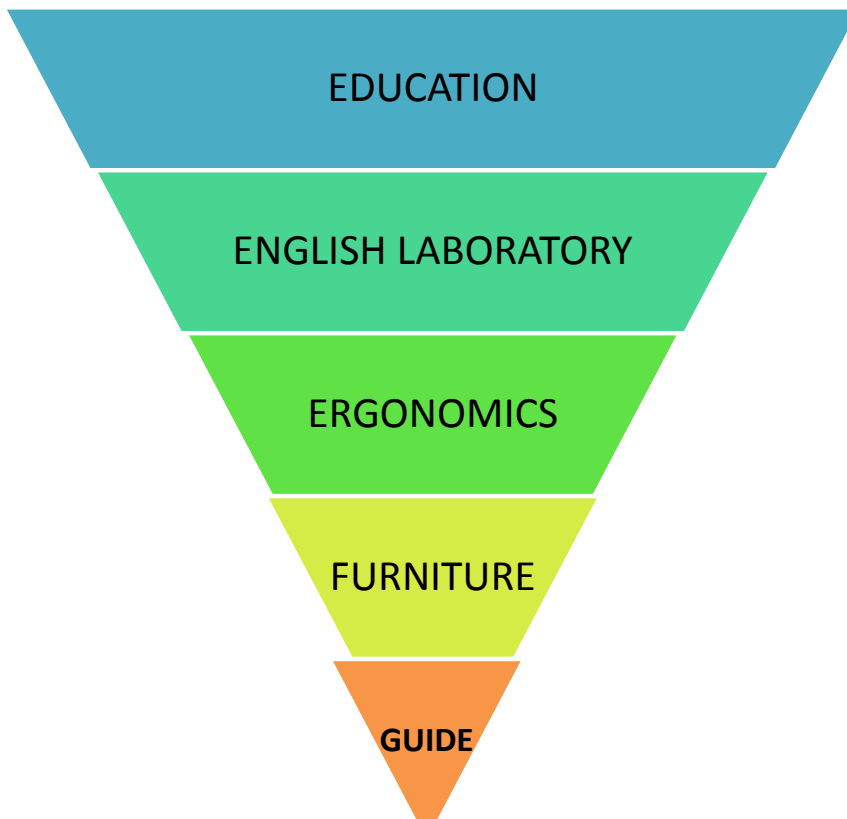
knowledge easily through technological resources as computers, headphones, microphones, smart board, data show and applying adequate furniture.

In addition the English students had seen the need to implement property ergonomics and furniture into English Interactive Laboratory with adequate manage and treat of the study place where students are expected to increase their English knowledge and causing interest while they learn it because the lack of ergonomics into an English laboratory take greatest risks as suffering myopia and strees which are produced by misusing of a sit or computing so this affect to all kind of students who do not use furniture adequatly. The new English Interactive Laboratory became in a helpful place where students and teachers of English develop the four English skills together such as Reading, Listening, Speaking and Writing in totally.

The teacher in charge of the English interactive laboratory can use the proposal of this investigation as a guide in order to learn how to apply ergonomics on his or her students' life for example with practical tips to use the adequately furniture and ergonomics keeping good study habits and postures into the English Interactive Laboratory in order to achieve the best study environment without affecting their health and desire to learn.

## **CHAPTER I**

### **1. MAIN CATEGORIES**



## **THEORETICAL FRAMEWORK**

### ***1.1 EDUCATION***

It is the process which people learn and transmit Knowledge, values and customs according to their environment, through education the human being knows how to act and is controlled in society. Also it is the way to share ideas through experiences and learn from them.

*ALEXIS W. (2003) says, "Education refers to the process of learning and acquiring information in an educational establishment for example at a school, college, or university. Also it is important for learning basic life skills, as well as learning advanced skills that can make a person more attractive in the job market." (Education and Educators, page 24)*

Consistent with Alexis W. refers education is the formal manner of acquiring Knowledge through strategies that teachers use when they are transmitting the information in Educational places as schools, High schools and Universities, also it is the process of formal individuals socialization, in order for students to become good human beings and they can help people to be able for a good development of their behavior and all skills that everybody has.

*JOSEPH RENZULLI (1987) says “Education in its broadest, general sense is the means through which the aims and habits of a group of people lives on from one generation to the next. Generally, it occurs through any experience that has a formative effect on the way one thinks, feels, or acts”. (School wide Enrichment Model, page 78)*

Código de campo cambiado

Consistent with Joseph Renzulli “Education is the proper process by which society deliberately transmits its accumulated knowledge through life experiences, customs and values from one generation to another in order that individuals or pupils develop their thinking skills adequately and being critical people without affecting their behavior or believes.

### ***IMPORTANCE OF EDUCATION***

Education has a huge impact on the society. It assumes that a person is not in the proper sense although he or she is educated. The education trains the human mind to think and take the correct decision on his or her needs. An unskillful person cannot read and write and for this reason he is closed to all the knowledge and wisdom he can get through books and other ways. In other words, he is kept from the outside world. In difference, an educated and cultured man lives with the windows open towards outside world.

The importance to get and provide an educational training cannot be ignored by any nation, country or state because it is an essential right of all citizens or individuals around the world. Nowadays, the role of education has become in a relevant aspect



because the economic and social development of a particular country depends of a clever person so that he or she can change the future of a nation through good or bad decisions.

### ***TYPES OF EDUCATION***

Education is the most efficient and effective way of teaching and learning the basic and advanced skills and knowledge. Being the foundation of our society, education encompasses our lives by motivating our minds and molding them into intelligent ones. Each one of these, study the behavior of a determinate group of learners in order to provide the properly educational training to them and help them to understand and realize the importance of learning.

### **FORMAL EDUCATION**

Formal education comprises of the basic education that a person receives at school, high school or university. The basics, academic and trade skills are exposed to the person in formal education through trainers, teachers who know and manage an specific study field and transmit their knowledge in a easy way using an appropriate methodology with learners .

Starting with nursery education, a person learns the various aspects as he advances towards primary, secondary and higher education. While nursery, primary and secondary education are received by a student at a school, higher education, or post-secondary education, is generally disclosed at a college or university.

### INFORMAL EDUCATION

Informal education includes educating one through informal way of communication and reading books. It is edifying someone outside the basic form of education, that is, in schools, and without the use of any learning methods. This is considering as popular wisdom in which there was no a previous training to get knowledge. Also it is considered as not adequate strategy of learning because students do not reason and they are not able to provide and transmit their knowledge to someone else.

### SPECIAL EDUCATION

The special education is particularly for students who have been evaluated on the various parameters of disabilities and have problems to learn easily and they are educated through a special learning method, known as learning to read, it is a gradual and systematic method in which children with Down syndrome enjoy learning by the association of the picture with the word. In addition special students like interactive classes where they learn through games, body movements and facial expressions because they are always dynamic people and they cannot understand when teacher only speaks.

### ADULT EDUCATION

Adult education is the process of educating to older people as it aims towards educating an adult on literacy in order to overcoming the social inequalities. Adult education is the way in which teacher must have patience and adequate behavior to

transmit his or her knowledge to adult students because they do not learn in the same way.

### ***EDUCATION LEVELS***

They are process for which learners increase and get their wisdom through the teacher's experience; also education levels are steps that pupils must follow in order to be analytical and critical students.

There are four Education levels:

- NURSERY EDUCATION
- PRIMARY EDUCATION
- SECONDARY EDUCATION
- HIGHER EDUCATION

### ***TEACHING LEARNING PROCESS***

Teaching learning process is the main aspect into the education or pupils' training and the greatest instrument of education to get changes in the students' behavior. In teaching learning process the teacher, learner, curriculum and other variables are organized in a systematic way to fulfill the predetermined goals and achieve to students become in excellent thinkers providing ideas, giving their critical analysis according a specific matter.

It helps students to catch the knowledge through an adequate educational training and developing the study strategies with teachers, Also the principal goal of teaching learning process is transforming the students' mindsets in order the pupils become in critical individuals. Teaching learning process is the way in which

### ***ENGLISH LANGUAGE TEACHING***

The teaching of the English language is used to facilitate the communication between people who are not English speakers with native speakers through an specific method to learn it in order learners dominate the English language in wherever place that it is spoken. To teach a foreign language requires so much patience because most of students do not have the same grade of knowledge as other but all depend how the teacher works with them. The English teachers' performance is absolutely important and needs to be properly structured by practicing of communicative situations inside and outside the classroom.

English teaching into a globalized world is amazing so it can open doors in different kind of places such as business, work, travel and study. Nowadays the English language teaching is considered as an essential aspect on society because thanks to this language people can break down and conquer the world. Currently, people who do not speak English are considered as illiterate people because it does not allow them to know the outside world and take the different opportunities that English language gives them.

There are many methods to learn English language through English books, English compact disks, virtual English classes, internet, music, etc. So each one of these methods have specific techniques to teach it but the real learning is when students live the language and it can be possible when teachers make their classes in a dynamic way and speak English all the time in order that their pupils involve into the language and lose their fear to speak.

When students lose the fear to speak in English, they trust on their environment and develop their English skills by themselves so it is important that teachers fix the mistakes of students when the class ends because they will take into account the teachers' observations in their next performance. For a good understanding and comprehension of the English language is necessary teachers do not make their classes dull and tired because this way to teach bored to the students and they don't show desire to learn.

## ***1.2 ENGLISH LABORATORY***

English Laboratory is a technological and educational place where students increase their English knowledge in an interactive and dynamic way developing the four English language skills such as reading, listening, speaking and writing through multimedia resources as computers, proper interactive software, headphones, microphones and comfortable and suitable furniture where students feel good while they learn English into the Interactive Laboratory.

***ESMERALDA SALGADO (2010) “The language lab has revolutionized the way we teach and students learn a language in a few time. Students can practice their language skills in a non-threatening and technologically comfortable environment. They can observe, make predictions, and solve problems in real-time using authentic material. They can receive instantaneous feedback about their communication skills.”(pag 15)***

According to the author, in the actuality, to learn a foreign language is easiest because there are new strategies to receive knowledge not only reading books, in this case students can learn English observing situations, getting feedback and they can develop their language skills with a good didactic material and technological resources in which facilitate the understanding and comprehension of students. Also in an English Interactive Laboratory they can live the language in all its aspects.

***SEBASTIAN DEFAZ (2009) says “Language laboratory refers to the various tools and equipment used by teachers working in a laboratory. These include tools such as headphones specialty and equipment such as computers with smart screens and virtual programs.”(pag 32).***

Consistent with Sebastian Defaz, Language Laboratory is composing for technological instruments which help the students’ language to develop their skills. Also English language laboratory is an equipped place with audio or audio-visual installation used as an aid in modern language teaching. They can be found in schools, universities and academies. Currently, English language laboratories are

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generally multimedia computers which facilitate its use and catch the students' knowledge as it is required.

### ***THE NEED FOR AN ENGLISH LANGUAGE LABORATORY***

An English laboratory is required for any kind of students in order to have high language knowledge for communicative and comprehension purposes, with easy understanding and precision being essential for effective and efficient communication. Laboratory helps to students to develop and improve their English abilities with appropriate resources which are practical objects for the learning process. Also the English Language Laboratory has an equipped place with technological resources in which allow students have practical works guided for interactive teachers who develop their English classes in modern way using innovate tools as digital multimedia computers, headsets and microphones in order to enrich the pupils' English language learning knowledge.

The interactive tools are designed for improving the English language teaching and facilitates to the learners acquiring the language quickly and easily in order to work on hearing comprehension, oral and writing skills. Also it helps to the English Language knowledge becomes in an enriching aspect for learners because the way to teach and learn the language is different and pleasurable.

### ***TYPES OF ENGLISH LANGUAGE LABORATORIES***

The language laboratory assists educators in delivering foreign language instruction, and has been through many developmental stages over the years.

### CONVENTIONAL LABORATORY

This one is known as the traditional way for the English language teaching because it is placed into a classroom without technological resources in which there is only a tape recorder and audiocassettes of the foreign language to teach the learners. This kind of laboratory is just used for listening and students' pronunciation and they cannot develop the four English language skills. Nowadays, it is not appropriate for English language teaching because it does not help students to know the language in totally, so that writing skill is not developed there, for this reason this is a trouble in the teaching learning process.

### LINGUA PHONE LABORATORY

Lingua phone laboratory is another kind of traditional laboratory, with a few teaching tools where learners are training with headset to listen to the audiocassettes being played in which there are noises and students get distractions constantly. It does not help to students to increase and develop their English language skills because it makes noises while students listen audiocassettes so it lets no students developing listening skill.



### INTERACTIVE ENGLISH LANGUAGE LABORATORY

This one is the most modern places to teach the English language because into this laboratory there are different kinds of software to work in on. For being considered as an interactive English language laboratory is necessary to apply quality standards, technological equipment, suitable and ergonomics furniture and software according their level of English knowledge. It is the most wonderful and amazing laboratory where English language skills are developed adequately and totally because Students and Teachers can work on internet with grammatical tasks completing blanks, develop a reading with filling blank spaces, make virtual oral test, with only one objective to make English classes in another way, where students enjoy and feel able to learn this important language.

### **1.3 ERGONOMICS**

Ergonomics is the relationship that students have with their surrounding because the lack of ergonomics in their study place can affect their performance and productivity into the English interactive laboratory. Also the proper use of ergonomics can prevent serious injuries on teachers and students' health because the adequate use of ergonomics cares to all individuals environment.

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**TAYLOR & FRANCIS (2008) say, “Ergonomics, also known as human factors, is the scientific discipline that seeks to understand and improve human interactions with products, equipment, environments and systems. Drawing upon human biology, psychology, engineering and design,**

**ergonomics aims to develop and apply knowledge and techniques to optimize system performance, whilst protecting the health, safety and well-being of individuals involved. The attention of ergonomics extends across work, leisure and other aspects of our daily lives.” (Comfort and Ergonomics volume 3 pag.54)**

According to the author, ergonomics is a discipline that studies the relationship between students and study equipment, also it is the study of new performance techniques with study tools as long as it protects the health of students. It is the applied science of equipment design intended to maximize productivity by reducing educational fatigue and discomfort.

*JUSTIN O’SULLIVAN, Ergonomics for Work (2007) says  
“Ergonomics contribute to the design and evaluation of tasks, jobs, products, environments and systems in order to make them compatible with the needs, abilities and limitations of people. Ergonomists, in practice, have to address real world problems and seek the best compromise under difficult circumstances while aiming to provide cost effective solutions.” (pag 14)*

In the researcher’s point of view, “ergonomics is the design and evaluation of tasks, jobs, products in order to make then compatible with limitations of students, tools and study environment. Also ergonomics care the people’s delimitations so that it is an aim to provide cost effective solutions”

### ***IMPORTANCE OF ERGONOMICS***

Ergonomics is the science that designs an appropriate place for all kind of people according their needs and its most important purpose is to guarantee their physical and mental wellbeing. An ergonomics place helps to increase the performance and productivity of any kind of individuals trough a pleasant and appropriate place where people enjoy staying there without affect their physical and emotional heath. According to educational places ergonomics must be an essential factor in order to prevent damage on teachers and students´ body having them in good conditions and making good environment.

### ***ERGONOMICS FOR TEACHERS AND STUDENTS***

As usual, there are a lot of teachers and students which are not satisfied with their study and work places so they often complain about inadequate desktops, narrow spaces, inappropriate chairs, etc. The teachers and students´ dissatisfaction is due so that educational institutions not apply the ergonomics into their study and work places in order to prevent the most common injuries as back injuries which could be eliminated by following simple ergonomics principles. If the university´s authorities provide ergonomics study places to their pupils, they will feel better, they could perform better and finally they would love their studies.

### ***THE BENEFITS OF ERGONOMICS***

Into a study place the environment must be appropriate for students and teachers in order to feel safe and healthy, a mentally fit student can work better than a student who is irritated by his study place. If educational institutions do not provide a good

study fit environment for students, it is absurd to expect a good perform on their skills. Ergonomics studies show that ergonomically designed study places are more productive and efficiency than those which are not designed ergonomically for educational activities or educational proposes so the greatest ergonomics benefit is to safeguard the students and teachers' health in order their performance will be better and they become in productive people.

### ***TYPES OF ERGONOMICS***

Ergonomics is most known like human factors. It is the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system, and the profession that applies theoretical principles, data and methods to design in order to optimize human well-being and overall system.

There are three types of ergonomics.

- Physical Ergonomics
- Cognitive Ergonomics
- Organizational Ergonomics

### ***ERGONOMICS INTO A LABORATORY***

Currently, there are different styles of computers that allow students to increase the study rates and reduce time spent on classes' activities. The introduction of flat monitor screen provides the teacher with the ideal opportunity to create a truly ergonomic environment for their students by utilizing height and reach adjustable mounting solutions. The partial graduation of technological equipment into an

English interactive laboratory prevent that equipped fall down while it is handle by students so for that reason ergonomics must be applied through a previous study of the place where the English interactive laboratory will be applied.

In addition, the best students' benefit is the comfort into the English interactive laboratory because it provides the adequate adjustment of the computers in order to the screen monitor does not move and students work without troubles. Ergonomics into an English interactive laboratory must be taken into account because it could facilitate the learning and teaching process so that good ergonomics design can protect the health of students and teachers and prevent muscles disorders and injuries. Also ergonomics can provide a way of linking diverse initiatives undertaken in order to enhance the learning environment and make a safe place in which students feel as at home.

#### ***1.4 FURNITURE***

Furniture are useful objects and can be made by different kind of materials as wood, plastic and metal and its durability depends as it is used. The most furniture objects are used for decoration and provide comfort into a house, schools, offices, laboratories so on; furniture make easy the people's life because most of them are use to have a rest such as a chair or bed and they have different types of uses.

**SERRA, JOSEPH MARIA (1999) says "Furniture are objects that serve to facilitate common uses and activities in homes, offices and other premises. Usually the term refers**

**to objects that facilitate common human activities.”  
(Furniture and Micro architecture page 90).**

Conforming to Serra, Joseph Maria Furniture is used into houses, schools, universities, offices so on. Also it helps to people in their daily activities for example bed to rest, tables to do the homework and chairs. They are made of a diverse material which gives to people comfort and it is elegant into a house or anywhere.

*THOMAS HOPE (1769) says “Furniture is using to decorate houses and it can be made from many materials, including metal, plastic, and wood. Furniture can be made using a variety of woodworking joints which often reflect the local culture.” (76)*

In the Thomas Hope’s point of view “furniture can be made of diverse materials which give to people comfort and it is elegant into a house or wherever place which furniture will be adapted. The use of furniture show the people’s culture through their designs and colors ”

## **TEACHERS’ DESK**

First of all, for teachers is very important to have a desk where they feel comfortable because it is their work station. It must be big enough to suit all their need and must

have enough storage for any and all their items. The teachers' desks must be a wide sit because they are sitting there almost 8 hours per day and it is stressful for them so it is necessary that the seat is cushioned and ergonomic but not static.

### **DESKS FOR YOUNG STUDENTS**

When considering classroom furniture, teachers union needs to think long and hard about the desks for its students. Along with this, the furniture purchase should be based largely on the age group. Younger students need a different type desk than older students taking into account the right size, the material of furniture and it is necessary that it has a place where students can store materials. This way they do not lose their supplies, and can have a work station of their own.

### **DESKS FOR OLDER STUDENTS**

Older students need most conform at the rest of students because they are in their thirties and forties and most of them work every single day, if educational institutions want to provide a good quality on their education they need to offer adequately study places for older people because they cannot receive the knowledge as a young student but they feel pleasant when take sit on a comfortable chair, so they do not need a desk with storage. These desks will have a smaller surface. The best ones have a groove at the top of the desk for holding a pen or pencil. In many cases, the desk and chair are attached.

### **USE OF FURNITURE**

The piece of furniture should also be usable and durable.

- Furniture that increases efficiency by providing greater utility for the user, such as multifunctional furniture is always preferable.
- Durability matters because well-made furniture with a longer functional lifespan contributes to the health of the planet by not adding to the landfills.

### ***1.5 GUIDE***

A guide is a technical document to give instructions and help people step by step how to use something. It uses an adequate methodology in order to an individual understands instructions easily.

***STANLEY WOLF (1990) says “User Guides are written to help people understand a software application or computer system. They are also called User Manuals. When writing a User Guide, use simple language with short sentences. This writing style helps the user understand the application.” (Guide to Electronic Measurements and Laboratory Practice, page 176).***

According to Stanley Wolf “a guide facilitates to people the use of something, giving instructions with short sentences in order that readers understand instructions in easy manners. Also it is a helpful tool to show people through diagrams, pictures how to build or assemble a determinate object.”



*On the other hand, PIA PARKER (2008) “A guide, also commonly known as a manual, is a technical communication document intended to give assistance to people using a particular system. It is usually written by a technical writer, although user guides are written by programmers, product or project managers, or other technical staff, particularly in smaller companies.” (pag 67).*

In the Pia Parker’s point of view “A guide is a technical document to give instructions and address people with clear assistance on the characteristics of an object in which uses a simple language in order to readers do not find any kind of problem while they fix a particular system.”

## **USER GUIDE**

User Guide is written for helping people to understand how a specific stuff needs to be assembling in order to arm any kind of object through clear instructions. It is also known as user manual and it is characterized for using simple language with short sentences. A user guide is used as a technical communication document intended to give assistance to people using a particular system. It is usually written by a technical writer, although user guides are written by programmers, product or project managers, or teacher’s guides to manage a classroom adequately, preventing the misuse of a determinate place or object.

To write a guide the majority of technical writers often create a documentation plan before writing their user guide. This defines the scope, size, delivery format and resources required to produce the actual user guide.

## **CONTENTS OF A USER GUIDE**

The contents of a user guide are based on instructions explained briefly about the use of an undetermined object. The most common user guides contain the next steps.

- ❖ A cover page
- ❖ A contents page
- ❖ Introduction of the guide
- ❖ A guide on how to use at least the main functions of the object
- ❖ How does it work
- ❖ Recommendations

## **IMPORTANCE OF USER'S GUIDE**

A user guide should even deserve more than a fair focus as brochures and catalogs do. As a direct portal to the product features, the user guide is of great significance for the actual users to learn about the product and whether they find the learning is easy and pleasant could ignite their favor or repulse toward the product itself. The looking good of a designed user guide is a most crucial documentation to help existing customers cultivate brand faith and loyalty, and further retain and enlarge the user base of the whole lines of products under the same brand.

## **CHAPTER II**

### ***2.1 TABULATION AND DATA ANALYSIS***

#### ***BRIEF CHARACTERIZATION OF THE TECHNICAL UNIVERSITY OF COTOPAXI***

Technical University of Cotopaxi was created on January 24<sup>th</sup>, 1995 in Latacunga city which was a dream of Latacunga citizens and the province in general. It was an extension from Technical University of the North that is located in Ibarra city nowadays.

Technical University of Cotopaxi began its educative project in different places like UNE that is teachers' union; Simon Rodriguez and Luis Fernando Ruiz both are well-known high schools in Latacunga city that lent their infrastructure to run the University. After a long time the university was growing more every day with professional teachers indifferent areas that the University needed, teachers capable of meeting all the citizens expectations who trusted in the university.

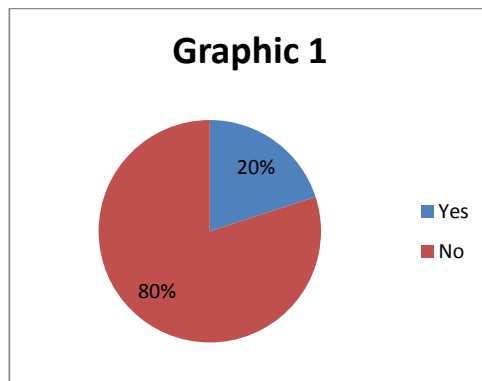
Technical University of Cotopaxi had three Academic Units; the first one is Academic Unit of Administrative and Humanistic Sciences which offers the following careers: Basic Education Degree, English Degree, Accounting Engineering, Commercial Engineering and Executive Secretarial Degree. The second one is Academic Unit Agricultural Sciences and Natural Resources; it was situated in Salache neighborhood at the south of Latacunga city. It offers to university community the next occupations: Ecotourism Engineering, Agro Industrial Engineering and Veterinary Medicine. The third one is Academic Unit of Science and Applied Engineering which offers the next careers like Computing Engineering, Electrical Engineering, Graphic Design and Industrial Engineering.

## **2.2 ANALYSIS AND INTERPRETATION OF THE RESULTS** **ANALYSIS OF THE SURVEYS APPLIED TO TEACHERS OF** **THE ENGLISH CAREER**

### **1. Is there an English laboratory in the Technical University of Cotopaxi?**

**Chart 1**

<b>Question</b>	<b># teachers</b>	<b>%</b>
Yes	1	20%
No	4	80%
<b>Total</b>	<b>5</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi

**Elaborated by:** José Ignacio Andrade and Aracely Cumbajin

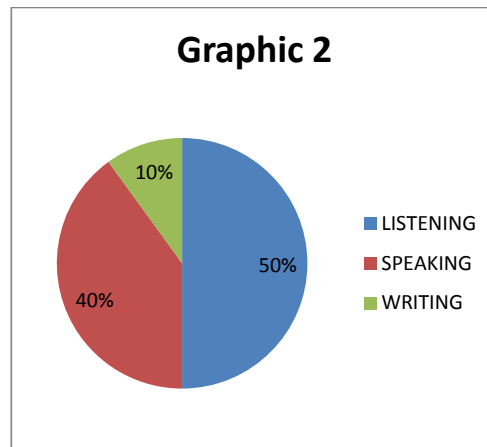
In the first question, four teachers that represent the 80% said NO, there is no an English Laboratory and one teacher with the 20% said YES, there is a lab in the Technical University of Cotopaxi.

According to this information, most teachers consider there is an English Laboratory in the University but it is not equipped adequately for the use of students.

2. What skill do your students improve with the use of an English Interactive laboratory?

**Chart 2**

Question	# teachers	%
Listening	5	50%
Speaking	4	40%
Writing	1	10%
<b>Total</b>	<b>10</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajin

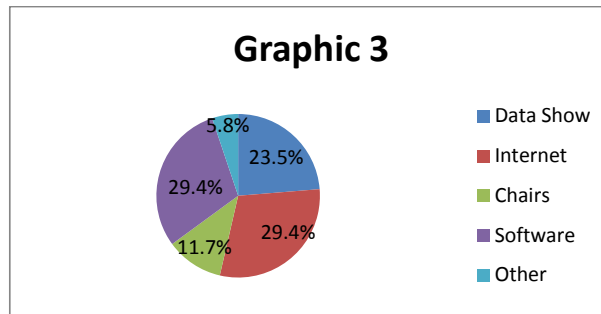
Talking about what skill the English students are going to develop in an English Laboratory, the 50% considered that Listening will be the most develop skill into it, the 40% said Speaking and 10% of teachers said Writing; those skills will be developed in totally in the English Interactive Laboratory.

Considering that English Students have no developed their skills in totally into the new English Interactive Laboratory they will develop all skills that they need to be good professionals.

**3. Which of the following elements are considered important in an Interactive Laboratory?**

**Chart 3**

Question	# teachers	%
Data Show	4	23.5%
Blackboard	0	0%
Book	0	0%
Internet	5	29.4%
Chairs	2	11.7%
Software	5	29.4%
Chalk	0	0%
Others	1	5.8%
<b>Total</b>	<b>17</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajin

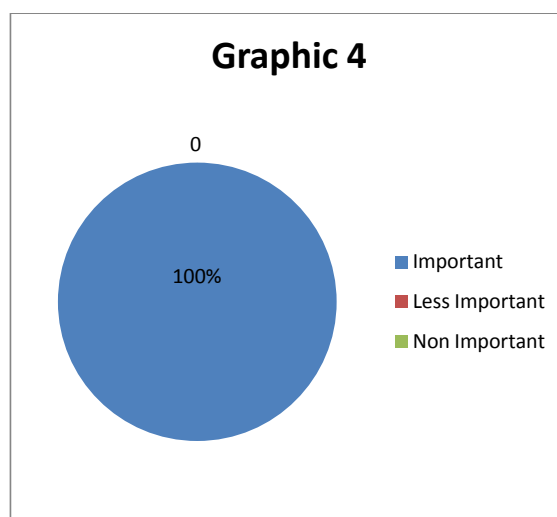
Here, the 29.4% of teachers consider that Internet is an important tool to work in class. The another 29.4% of teachers show that Software is an useful element into a Lab; however, 23.5% showed that Data Show is recognized as an essential element to do interactive classes, but 11.7% said Chairs are fundamental elements in the teaching learning process and 5.8% of teachers said Others taking account some types of electronic elements like computers, interactive board and adequate furniture.

According to this information most teachers consider that electronic elements are used frequently and all of them are interactive important element in order to transmit information and receive knowledge.

**4. How important is an English Interactive Laboratory in the English career?**

**Chart 4**

<b>Question</b>	<b># teachers</b>	<b>%</b>
Important	5	100%
Less Important	0	0%
Non Important	0	0%
<b>Total</b>	<b>5</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajin

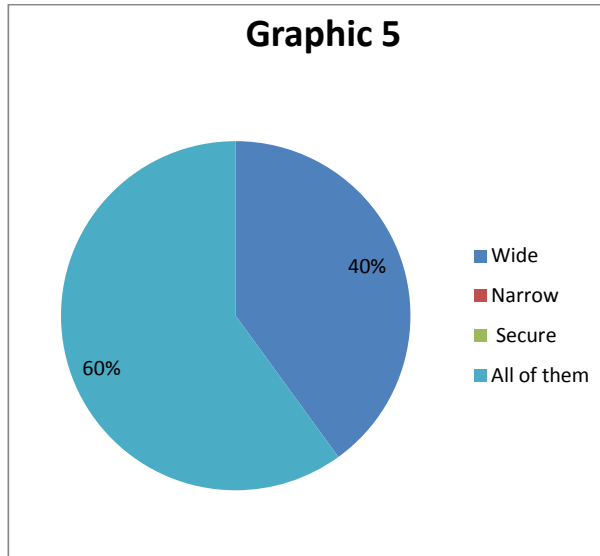
Consistent with this information the 100% of teachers said that an English Interactive laboratory is very important into education.

An English Interactive Laboratory is considered like a modern pedagogical place in order to make interesting classes, leaving behind the traditional environment.

**5. What kind of infrastructure does the English Interactive Laboratory need?**

**Chart 5**

<b>Question</b>	<b># teachers</b>	<b>%</b>
Wide	2	40%
Narrow	0	0%
Secure	0	0%
All of them	3	60%
<b>Total</b>	<b>5</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajin

In this question, three teachers answered “All of them”, which represent the 60%, and two teachers answered Wide with the 40% showing all types of infrastructure are important to the English Interactive Laboratory.

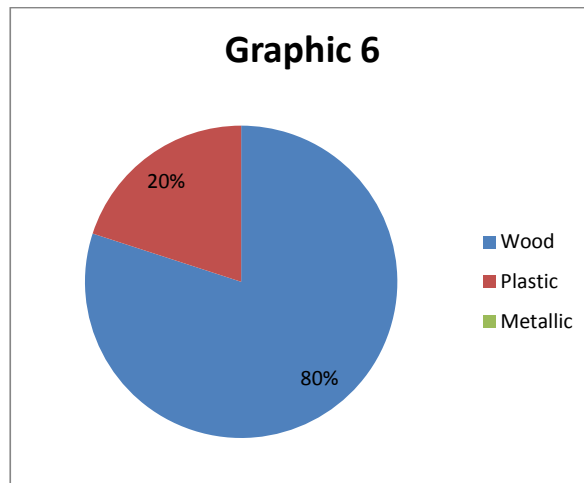
Conforming to this question the results manifest a huge relevant about the infrastructure that English Interactive Laboratory needs, in order to become a safe and comfortable place for University community.



**6. What kind of material do you consider the furniture should be made of?**

**Chart 6**

Question	# teachers	%
Wood	4	80%
Plastic	1	20%
Metallic	0	0%
<b>Total</b>	<b>5</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi

**Elaborated by:** José Ignacio Andrade and Aracely Cumbajin

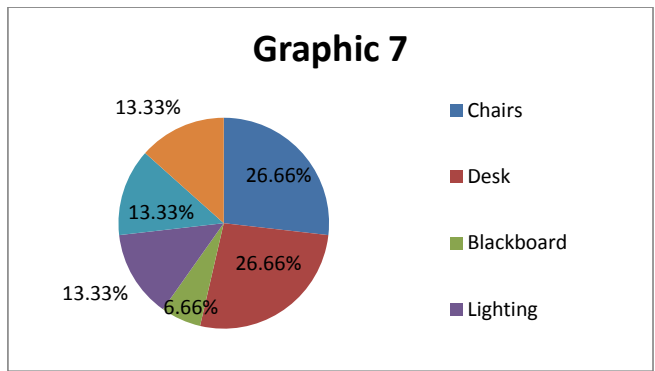
In agreement with this question, four teachers said the furniture should be made of wood, it represents the 80%, but one teacher chose Plastic, it represents the 20% of the results.

Then, it is necessary to emphasize a good number of teachers prefer furniture made of wood because it is elegant, enduring and gives the adequate comfort for learners and teachers as well.

7. Which of these elements do you consider as Ergonomics resources?

**Chart 7**

Question	# teachers	%
Chairs	4	26.66
Desk	4	26.66
Blackboard	1	6.66
Lighting	2	13.33
Internal & External sounds	2	13.33
Temperature	2	13.33
Others	0	0%
<b>Total</b>	<b>15</b>	<b>100%</b>



Source: Technical University of Cotopaxi

Elaborated by: José Ignacio Andrade and Aracely Cumbajin

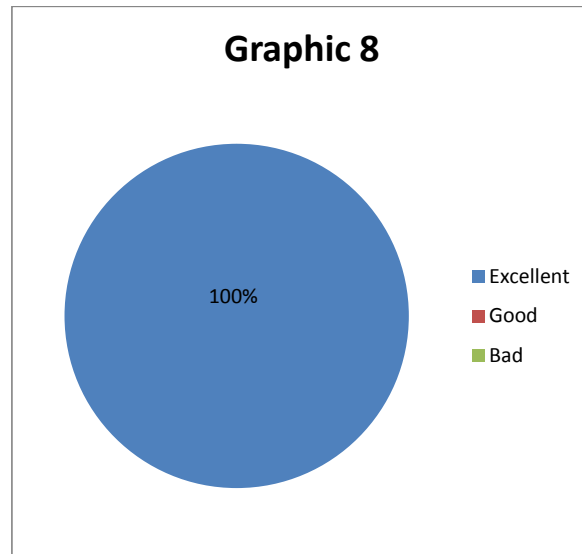
In the seventh question, the 26.66% of teachers considered to the Chairs as ergonomic resources, the 26.66% of teachers considered to the Desks as ergonomics elements as well. Also the temperature was considered for teachers an ergonomics element with the 13.33%, but internal and external sounds and lighting are represented with 13.33% each one, meanwhile Blackboard is considered as ergonomic resource with the 6.66%.

According to this information, the ergonomics elements are very important in an Interactive Laboratory because students can improve and develop their English language skills without problem, also ergonomics elements take care students' health and they bring the adequate comfort in order to avoid boredom and tiredness.

**8. How do you consider the comfort in an English Interactive Laboratory should be?**

**Chart 8**

<b>Question</b>	<b># teachers</b>	<b>%</b>
Excellent	5	100%
Good	0	0%
Bad	0	0%
<b>Total</b>	<b>5</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajin

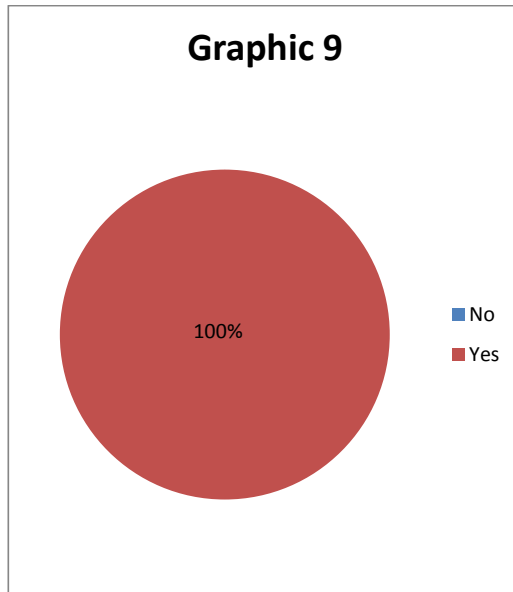
This question shows that 5 teachers said the comfort in the English Interactive Laboratory must be excellent for students; this is represented with the 100%.

Then, the English Interactive Laboratory will provide an Excellent and adequate comfort for teachers and students, the purpose of the English Lab is the learners enjoy the classes and learn in a better way.

**9. Should the furniture give comfortability to students, when they go to the lab? Why or why not?**

**Chart 9**

Question	# teachers	%
Yes	5	100%
No	0	0%
<b>Total</b>	<b>5</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi

**Elaborated by:** José Ignacio Andrade and Aracely Cumbajin

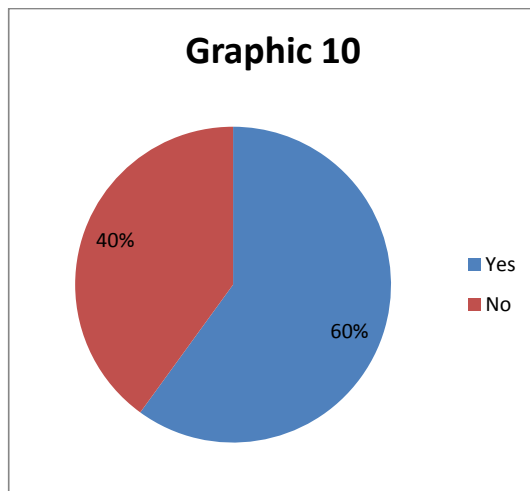
In keeping with the research, five teachers show that furniture must give comfortability to the students to facilitate an interactive learning into the English Interactive Laboratory with the 100%.

On the other hand, teachers said the most important role of furniture is to respect students' postures and gives sufficient trust to use it, comfortable furniture lets students can work better in order to avoid injuries, back pain, neck pain so on.

**10. Do you consider that a guide about ergonomics and furniture will help to improve the student's comfortability? As well as the teaching –learning process?**

**Chart 10**

Question	# teachers	%
Yes	3	60%
No	2	40%
<b>Total</b>	<b>5</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajin

Here, three teachers answered Yes, which represent the 60%, meanwhile, two teachers with the 40% said no ergonomics and furniture guide won't help students to improve the learning process.

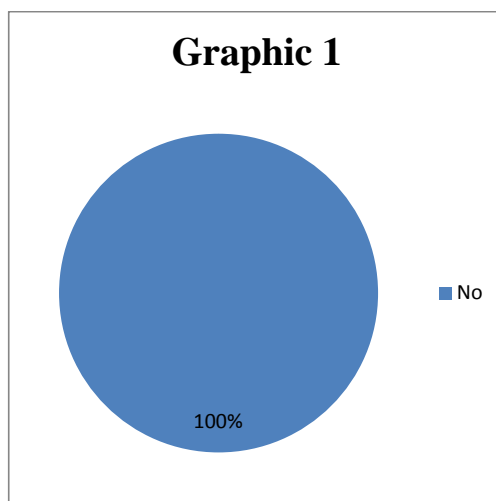
Therefore, there are three teachers who consider that the comfortability in the lab can help to improve the Teaching Learning Process because if students feel comfortable in the lab they will learn in a better way.

### **2.3 ANALYSIS OF THE SURVEYS APPLIED TO STUDENTS OF THE ENGLISH CAREER.**

#### **1. Is there an English Laboratory in Technical University of Cotopaxi?**

**Chart 1**

<b>Question</b>	<b># Students</b>	<b>%</b>
Yes	0	0%
No	100	100%
<b>Total</b>	<b>100</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajin

In the first question, one hundred students that represent the 100% said NO, there is no an English Laboratory in the Technical University of Cotopaxi.

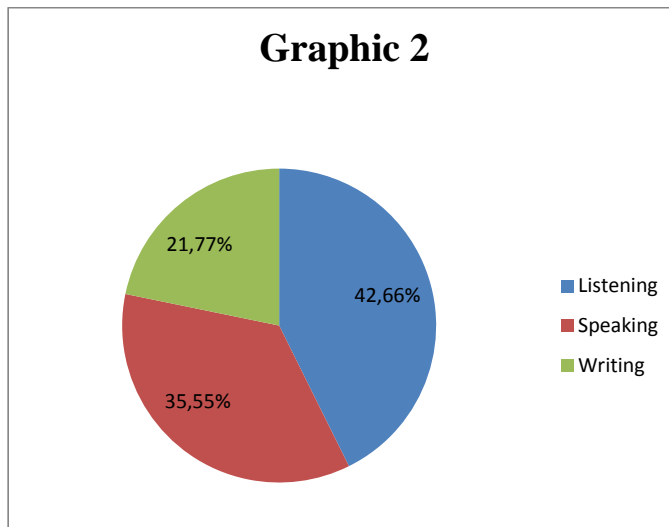
According to this information, most students consider there is no an English Laboratory in the University.

**2. - What skill your students improve with the use of an English Interactive Laboratory?**

**Chart 2**

Questions	# Students	%
Listening	96	42,66%
Speaking	80	35,55%
Writing	49	21,77%
<b>Total</b>	<b>225</b>	<b>100%</b>

**Graphic 2**



**Source:** Technical University of Cotopaxi

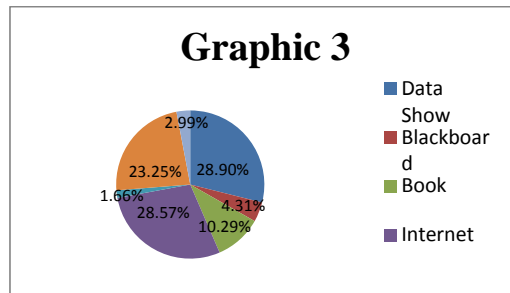
**Elaborated by:** José Andrade and Aracely Cumbajín.

Talking about what skill the English students are going to develop in an English Laboratory, the 42.66% considered that Listening will be the most develop skill into it, the 35.55% said Speaking and 21.77% of students said Writing; those skills will be developed in totally in the English Interactive Laboratory. Considering that English Students have no developed their skills in totally into the new English Interactive Laboratory they will develop all skills that they need to be good professionals.

**3.-Which of the following elements are considered important in an Interactive Laboratory?**

**Chart 3**

Questions	# Students	%
Data Show	87	28,90%
Blackboard	13	4,31%
Book	31	10,29%
Internet	86	28,57%
Chairs	5	1,66%
Software	70	23,25%
Chalk	9	2,99%
Others	0	0%
<b>Total</b>	<b>301</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajín

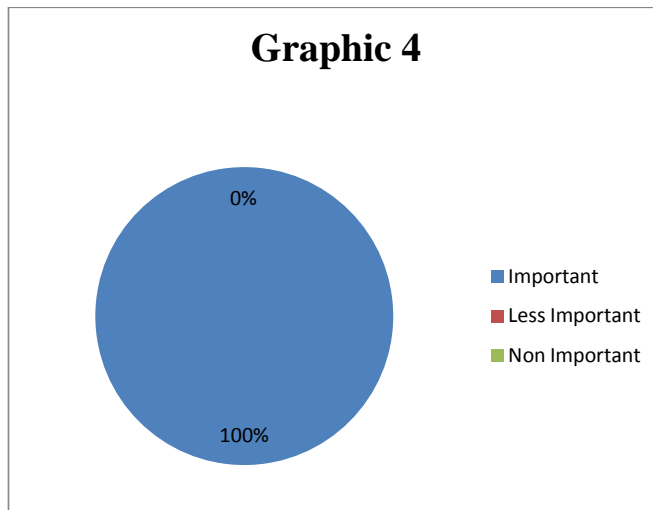
Here, the 28.90% of students consider that Data Show is an important tool to work in class. The another 28.57% of students show that Internet is an useful element into a Lab; however, 23.25% showed that Software is recognized as an essential element to do interactive classes, but 10.29% said Books are fundamental elements in the teaching learning process and 4.31% of students said Blackboard, 2.99% said Chalks and 1.66% showed that Chairs are important elements into an English Interactive Laboratory. According to this information most students considerer that electronic elements are used frequently and all of them are interactive important element in order to transmit information and receive knowledge.



**4.-How important is an English Interactive Laboratory in an English career ?**

**Chart 4**

Questions	# Students	%
Important	100	100%
Less Important	0	0%
Non Important	0	0%
<b>Total</b>	<b>100</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajín

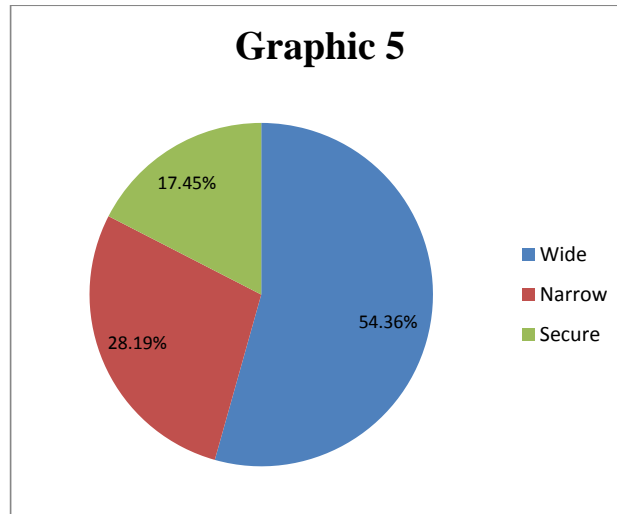
Consistent with this information the 100% of students said that an English Interactive laboratory is very important into education.

An English Interactive Laboratory is considered like a modern pedagogical place in order to make interesting classes, leaving behind the traditional environment.

5.- What kind of infrastructure does the English Interactive Laboratory need?

Chart 5

Questions	# Students	%
Wide	81	54,36%
Narrow	42	28,19%
Secure	26	17,45%
<b>Total</b>	<b>149</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajín

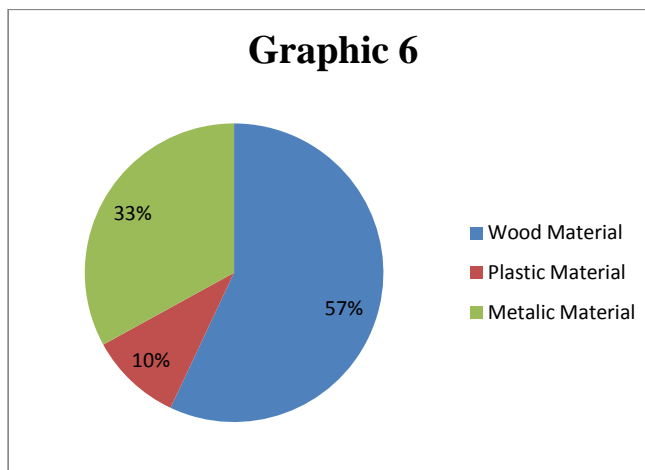
In this question 54.36% of the students consider that the English Lab must be wide, 28.19% of students show that The English Lab must be Narrow, and 17.45% said Secure Infrastructure; those are so important aspects to the English Interactive Laboratory needs.

Conforming to this question the results manifest a huge relevant about the infrastructure that English Interactive Laboratory needs, in order to become a safe and comfortable place for University community.

**6.- What kind of material do you consider the furniture should be made of?**

**Chart 6**

Questions	# Students	%
Wood Material	57	57%
Plastic Material	10	10%
Metalic Material	33	33%
<b>Total</b>	<b>100</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajín

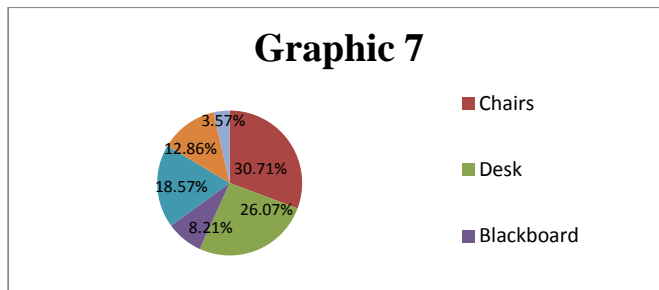
In agreement with this question, fifty seven of the students said the furniture should be made of wood, it represents the 57% , but thirty three students said Metalic, it represent the 33%, but ten students chose Plastic, it represents the 10% of the results.

Then, it is necessary to emphasize a good number of students prefer furniture made of wood because it is elegant, enduring and gives the adequate comfort for learners and teachers as well.

**7.- Which of these elements do you consider Ergonomics resources?**

**Chart 7**

Questions	# Students	%
Chairs	86	30,71%
Desk	73	26,07%
Blackboard	23	8,21%
Lighting	52	18,57%
Internal & External Sounds	36	12,86%
Teamperature	10	3,57%
Others	0	0%
<b>Total</b>	<b>280</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajín

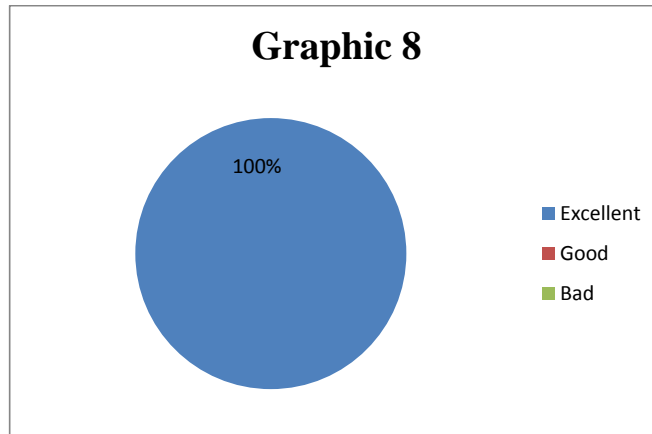
In the seventh question, the 30.71% of students considered to the Chairs as ergonomic resources, the 26.07% of students considered to the Desks as ergonomics elements as well. Also the Lighting was considered for students an ergonomics element with the 18.57%, but internal and external sounds is represented with 12.86%, and the Blackboard is represented with 8.21% meanwhile Temperature is considered as ergonomic resource with the 3.57%.

According to this information, the ergonomics elements are very important in an Interactive Laboratory because students can improve and develop their English language skills without problem, also ergonomics elements take care students' health and they bring the adequate comfort in order to avoid boredom and tiredness.

**8.- How do you consider the comfort in an English Interactive Laboratory should be?**

**Chart 8**

Questions	# Students	%
Excellent	100	100%
Good	0	0%
Bad	0	0%
<b>Total</b>	<b>100</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajín

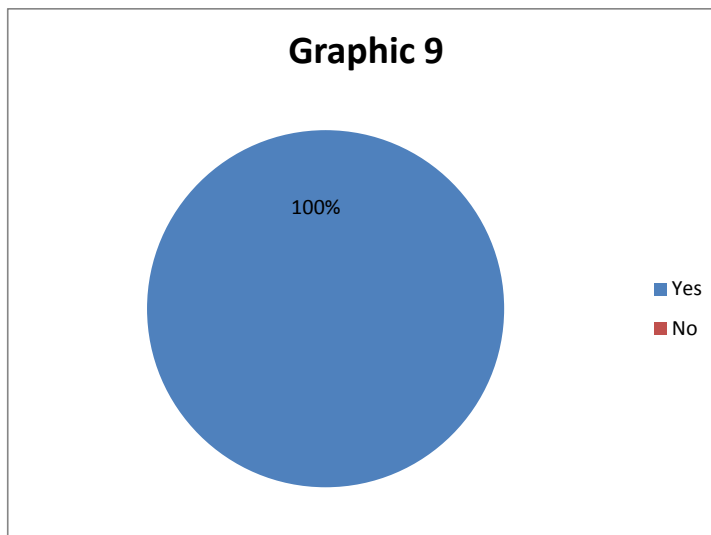
This question shows that 100 students said the comfort in the English Interactive Laboratory must be Excellent for students; this is represented with the 100%.

Then, the English Interactive Laboratory will provide an Excellent and adequate comfort for teachers and students, the purpose of the English Lab is the learners enjoy the classes and learn in a better way.

**9.- Should the furniture give a comfort to students, when they go to the Lab?**

**Chart 9**

<b>Question</b>	<b># Students</b>	<b>%</b>
Yes	100	100%
No	0	0%
<b>Total</b>	<b>100</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajín

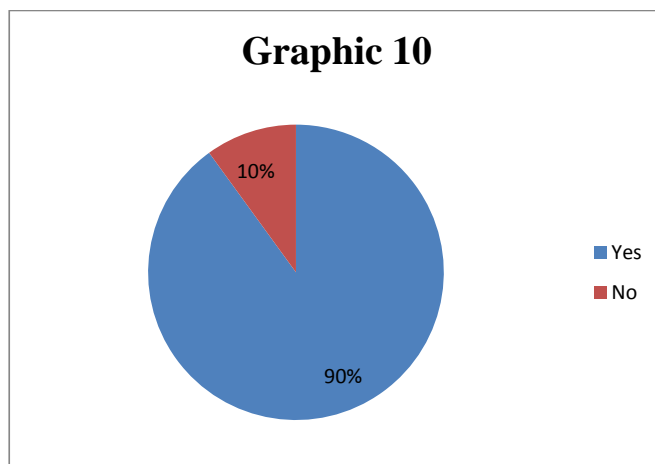
In keeping with the research, 100 students show that furniture must give comfortability to the students to facilitate an interactive learning into the English Interactive Laboratory with the 100%.

On the other hand, students said the most important role of furniture is to respect students' postures and gives sufficient trust to use it, comfortable furniture lets students can work better in order to avoid injuries, back pain, neck pain so on.

**10.- Would you like to apply a guide of Ergonomics and furniture in an English Interactive Laboratory? Why or Why not?**

**Chart 10**

Questions	# Students	%
Yes	90	90%
No	10	10%
<b>Total</b>	<b>100</b>	<b>100%</b>



**Source:** Technical University of Cotopaxi  
**Elaborated by:** José Ignacio Andrade and Aracely Cumbajín

Here, ninety students answered Yes, which represent the 90%, meanwhile, ten students with the 10% said no ergonomics and furniture guide won't help students to improve the learning process.

Therefore, there are ninety students who consider that the comfortability in the lab can help to improve the Teaching Learning Process because if students feel comfortable in the lab they will learn in a better way

## CONCLUSIONS

- There is not an adequate English Laboratory with appropriate tools, technological resources, suitable comfort and adequate study environment at Technical University of Cotopaxi where students can develop their English Language skills.
- The security, comfortability, interactivity are very important aspects into an English Interactive laboratory to the students and teachers in order to care their health and create interesting and dynamic classes in order that they both enjoy working and learning.
- The furniture must be made of a resistant material as wood for many reasons; the first one because it is an elegant and enduring material, second one wood can be repaired easily and can change its color. Also, it provides comfort and safety when they are used.
- The ergonomics guide will help the teachers and students how to use the furniture with the correct position without cause lesions on the back, neck; so on. Also it provides prior study exercises to keep the students and teachers' body relaxed.



## **RECOMENDATIONS**

- The care of English Interactive Laboratory should be paramount in order to safeguard the technological equipment that it has. Also students must follow the teachers' instruction prior using the equipment.
- The properly using of the ergonomics and furniture guide will help to teachers and students to prevent any kind of injury and it safeguards their health through advices and tips that the guide has.
- The appropriate material that furniture should be made depends on the University community necessities considering as a main aspect the teachers and students' health and providing suitable comfort into the English interactive laboratory.
- The adaptation of suitable furniture in the English Interactive laboratory will help to increase the students' concentration and keeping their bodies relaxed.

## **CHAPTER III**

### ***3.1 PROPOSAL***

“Design of an Ergonomics and Furniture guide into an English Interactive Laboratory of Academic Unit of Administrative and Humanistic Sciences at Technical University of Cotopaxi during the academic cycle March 2012 - July 2012”.

### ***INFORMATIVE DATA***

**INSITUCION:** Technical University of Cotopaxi

**CAREER:** English Major

**PROVINCE:** Cotopaxi

**CANTON:** Latacunga

**PARISH:** Eloy Alfaro

**NEIGHBORHOOD:** San Felipe

**RESEARCHERS:** José Ignacio Andrade / Aracely Cumbajin

### ***3.2 JUSTIFICATION***

For the proper use of the English interactive laboratory is necessary to have a guide which provides guidance to teachers and students on the appropriate use of technological equipment, study places and furniture. For this reason the researchers have designed an interesting guide called “Ergonomics and furniture guide into an English interactive laboratory” using an adequate methodology and explaining how must be the appropriate comfort in the teaching learning process.

In this guide teachers and students of the English career at Technical University of Cotopaxi will find useful and practical advices in order to prevent body injuries, muscle disorders, myopia. The guide contains didactic pictures and short statements to be understood easily for any individual in order to give teachers and students the best comfort and safety in the detaching and learning of English language.

The importance of an “Ergonomics and furniture guide into an English interactive laboratory will be a huge help for improving confort in the laboratory and making interactive classes. Teachers and students can apply different kind of exersices, mentiond in the guide, prior, during and at the end of the class in order to safeguard their health and welfare preventing any kind of injuries. Also this guide can help to recognize what kind of material is appropriate to make suitable furniture specially for students and teachers providing them the necessary security within the study place.

### **3.3 OBJECTIVES**

#### ***General***

- To improve the students' comfortability into the English Interactive Laboratory through specific information about ergonomics and suitable furniture.

#### ***Specific***

- To establish the specific information related to ergonomics and furniture in an English Interactive Laboratory.
- To set up the rules of comfortability to improve the Teaching Learning Process.
- To define the most suitable furniture according to the international standards through the proper ergonomics.

