PENINSULA OF SANTA ELENA STATE UNIVERSITY

FACULTY OF EDUCATION AND LANGUAGES

PEDAGOGY OF NATIONAL AND FOREIGN LANGUAGES

TECHNICAL ENGLISH AND ITS DEVELOPMENT IN READING SKILLS FOR STUDENTS OF INDUSTRIAL ENGINEERING MAJOR IN THE AREA OF INDUSTRIAL MECHANICS AT "UNIVERSIDAD ESTATAL PENÍNSULA DE SANTA ELENA". LA LIBERTAD. PROVINCE OF SANTA ELENA. ACADEMIC PERIOD 2021-1

RESEARCH PAPER

As a prerequisite to obtain a:

BACHELOR´S DEGREE IN PEDAGOGY OF NATIONAL AND FOREIGN LANGUAGES

Author: Francisco Xavier Vera López

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La Libertad, September 11th 2021

ADVISOR´S APPROVAL

In my role as Advisor of the research paper under the title Technical English and its development in reading skills for students of Industrial Engineering Major in the area of Industrial Mechanics at "Universidad Estatal Península de Santa Elena". La Libertad. Province of Santa Elena. Academic period 2021-1 prepared by Francisco Xavier Vera López undergraduate student of the pedagogy of national and foreign languages Career, Faculty of Educational Science and Language at Peninsula of Santa Elena State University, I declare that after oriented, studied and reviewed the project, I approve it in its entirety, because it meets the requirements and is sufficient for its submission to the evaluation of the academic tribunal.

Sincerely

……..

Ing. Verónica Vera Vera, MSc.

La Libertad, September 19th 2021.

STATEMENT OF AUTHORSHIP

I, Francisco Xavier Vera López with ID number, 092708925-0 undergraduate student from the Peninsula of Santa Elena State University, Faculty of Education and Languages, as a prerequisite to obtain a Bachelor's degree in English, in my role as author of the research paper "TECHNICAL ENGLISH AND ITS DEVELOPMENT IN READING SKILLS FOR STUDENTS OF INDUSTRIAL ENGINEERING MAJOR IN THE AREA OF INDUSTRIAL MECHANICS AT "UNIVERSIDAD ESTATAL PENÍNSULA DE SANTA ELENA". LA LIBERTAD. PROVINCE OF SANTA ELENA. ACADEMIC PERIOD 2021-1", I certify that this work is of my authorship, except for the quotes and reflections used in this research paper.

Francisco Xavier Vera López

092708925-0

GRATITUDE

I want to take advantage of this space to give my dear father greetings to the heaven. The person who trusted me from the beginning and was a very fundamental support. Thanks to him, the topic of this research surged as his idea, and I am so proud to present it. I am sure that you are happy to see the work completely done. I love you so much daddy.

Xavier

DEDICATION

I want to say thanks to God who permit me to be in this day. I want to dedicate this work to my mother, who always support and who is next to me in every single moment. She is an incredible person that the life gave to me and without the care of my parents none of my goals would be possible.

Xavier

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ABSTRACT

Teaching based on Technical English for Specific Purposes (ESP) has the greatest impact in the academic process of the students and professionals around the 21st century. In the present year, the English language is identified with the utilization of technical topics in various areas of knowledge, the principal idea compares the effect of the Industrial Engendering Major in Santa Elena province. The present research project has an essential impact to resolve a real necessity to the development of the reading skills. It has been possible to gather information starting with a background that describes how the need was founded and how the problem is develop into two variables. Adapting quantitative research based on a perspective of exploratory and descriptive research were necessary to develop a survey for forty-eight students from Industrial Engineering and two English Teachers. After the methodology process, the proposal was designed thanks for the data collection and the real need. It can be concluded that Technical English is an important fact that learners need to achieve for the development of their academic profile.

Keywords: English for Specific Purposes, Areas of knowledge, Reading skills, Technical English.

INTRODUCTION

The research Project is based on the impact of Technical English and its development of the reading skills of the English Language. Teaching English for Specific Purposes has managed to fill in a respectable place in the field of Teaching English as a Foreign Language or as a Second Language. In this day and age, it is too essential to train for a professional curriculum in which area is going to work. For the development of Technical English of some specialty such as Industrial Mechanics considering the needs of the students in their educational and professional field.

The present research project aim is to offer a contribution to empathize the use of the Technical English to obtain a development in the reading skills for Industrial Mechanics students. For this reason, the conditions that led to the emergence of Teaching English as a Second Language is essential as the same way how beneficial is the Technical English because since the 80s is exposed in the curriculum of some academic branches. In order to provide an overall explanation and analysis about what the research project is based on, the following paragraphs mention their content.

Chapter I, a brief explanation of the main problem that is related to the Technical English for Specific Purposes developing into a problem tree that justify directly with a general and specific objective.

Chapter II, is constituted by the theoretical framework, with the background research, philosophical foundation, fundamental categories, the hypothesis and the variables.

Chapter III, is composed by the methodology and the research modality, population, operationalization of the dependent and independent variables, gathering and the information processing plan.

Chapter IV, the proposal is established with a set of feasibility with the combination of activities annexed in the last part that contains the results of the needs of the Industrial Engineering Major focus.

CHAPTER I
THE PROBLEM

1.1 PROBLEM STATEMENT

Today more than ever it is essential to learn the English language for its utilization in almost all areas of knowledge and human development, in every one of people's work areas. It can practically be stated it is the language of the world. The "lingua franca" is the greatest international language that has some repercussions who are not Anglo-Saxon's countries including Ecuador and it affects directly to some fields of professions. The possession cannot be longer treated as a privilege; it is an obvious necessity. At the present, it is said the person who does not master this language would be at a clear disadvantage. Within the globalized world it is the tool that allows the communication with people from other countries on a global scale. It is indisputable that the English has become the global language of communication for excellence, one of the most widely used worldwide. It is an official language; it has a special status in about 75 territories around the world.

English for Specific Purposes (ESP) is the perfect response to a course design. Since the early 1960s, it has grown into one of the most important areas of EFL education. According to Hutchinson et al., (1987) states that ESP is not a planned and coherent movement, but rather a phenomenon that grew out of several covering tends. ESP courses are based on needs analysis to determine what students need to do in English as accurately as possible. For an undergraduate student, this could mean the learner, his or her parents, and sponsors, present and future lecturers, examiners, administrators, materials writers etc.

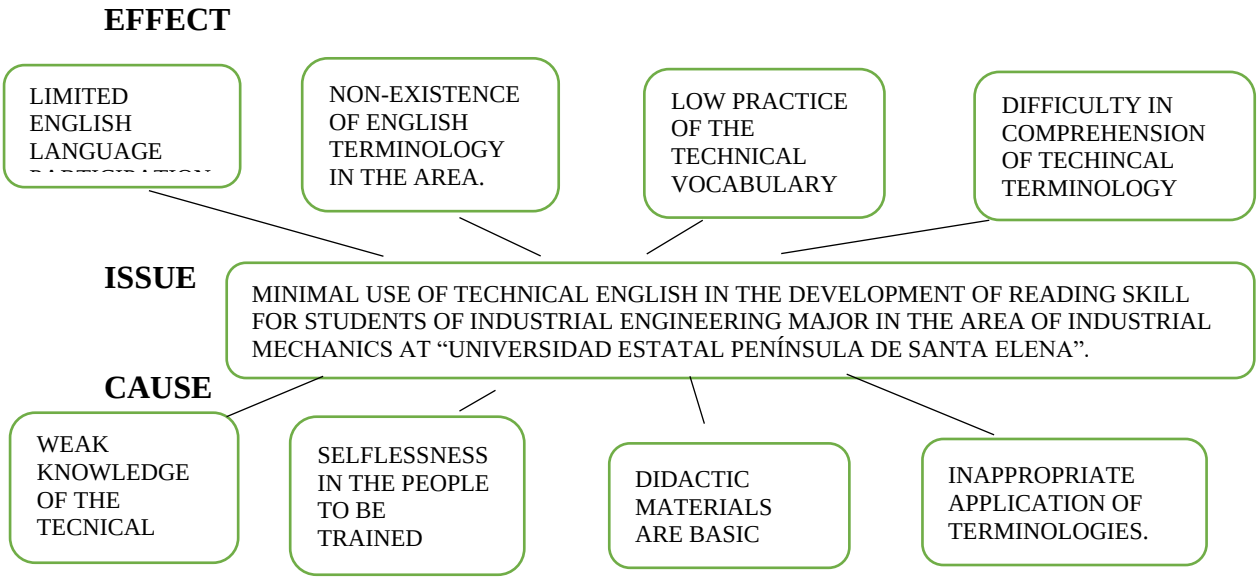
In Ecuador, the teaching of the English language was seen as only private institutions could access. Currently, with the purpose to improve education, the teaching of the English language is an obligation from the first years of education, in this way, the knowledge is

increasing, which means that students are feeling comfortable in the use of a second language and considering the English language a vital tool for all professionals.

According to Santa Elena province who is a productive territory in which the university is located it can realize that the command of English is an essential tool that will develop satisfactorily in the professional life. Despite of this project to strengthen the teaching of English that was implemented by the state, students reach a low level of language which requires research that determines learning gaps or focus on a process that allow English language teaching to be focused on each of the areas of education as it is in the specialty of industrial mechanics, which will help to improve training in that professional major. It is in this social context and educational within which arises the interest to systematize and show the various aspects of teaching English to students. Clearly it is an arduous task, but full of great satisfactions.

1.1.1 PROBLEM TREE

Figure #1 Problem Tree



Author: Francisco Vera López.
Source: Direct Investigation.

1.2 RESEARCH OBJECTIVES

1.2.1 GENERAL OBJECTIVE

Determine the use of Technical English to obtain a development of reading skills for students of Industrial Engineering Major in the Area of Industrial Mechanics at "Universidad Estatal Península de Santa Elena". La Libertad. Province of Santa Elena. Academic Period 2021-1.

1.2.2 SPECIFIC OBJECTIVES

1. To set up a bibliographic review about some theorical support in order to stablish theories and conceptualizations of the variables of the research project.
2. To stablish the methodology of the research for gathering truthful information based on the problems or necessity of the study.
3. To design a methodological guide that provides an answer to the research problem for students of Industrial Engineering Major in the Area of Industrial Mechanics.

1.3 JUSTIFICATION

The research is socio-educational since the fundamental interest is to socialize with teachers and students through the learning process of technical vocabulary and to the development of the reading skills with their own abilities, considering that the research must be effective, and it could require a deep introduction on the topic to be developed. The students of this major from UPSE are in a city where the command of English is very important due to the existence of some workplaces related to commerce, tourism, technology, electronic, metallic and oil company. For this reason, the learning of the language must be focused on the needs of the students. So, it is vital that inside the classroom it must exist the knowledge of Technical English and the benefits that its management support.

The research is feasible, because the presentation and execution of this work has the support of the director of Industrial Engineering Major, teachers, and the learners who play an important role in the design of the proposal. Their support is a great help since it allows to gather information in a fluid way, obtaining information and data, as well as in the different activities obtained by the researcher necessary for the fulfillment of it without any rejection. After the research, students will be able to share their experience of how their English is developing in the ESP purpose. Having this kind of opportunity, they will upgrade their professional profile like to formulate, evaluate, and execute industrial development projects; to design, plan, organize, direct and control production and quality systems in the industry.

The research is important since the necessity of the Industrial Engineering students for learning English as a Specific Purpose to obtain a good quality in their academic process. The implementation of Technical English in the teaching-learning process can facilitate a reading development and the understanding of technical terminologies, names of machinery, focus areas of industrial mechanics, tools and procedures used in their specialty which represents a great advantage for people who have a degree of understanding and mastery of it.

For the beneficiaries of the Engineering Major where the research is developed, it has a great impact to apply as a pedagogical strategy to study the influence of the Technical English has on the Reading skills, because its vision is to empower and encourage the students to manage the language in the technical area of their specialization. In addition, it helps to advance their capacity of knowledge about technical vocabulary in English to put it into practice in a training program, internships, technical papers, and technical works.

1.4 PROBLEM LIMITATION

Field: Education

Area: English

Appearance: English for specific purposes (Technical English)

Space limitation: “Universidad Estatal de Santa Elena”, Industrial Engineering Major, Industrial Mechanics Area.

Time limitation: Academic Period 2021-I.

Delimitation of the population: English Teachers of the Language Center and students of Industrial Engineering Major .

Context Limitation: This research will be focused on the Technical English and its development in reading skills for students of industrial engineering major in the area of industrial mechanics at “Universidad Estatal Península de Santa Elena”.

CHAPTER II
THEORETICAL FRAMEWORK

BACKGROUND

Around the world, the English language is an interest that stresses the need for a new sphere of learning a second language. It is English for Specific Purposes (ESP), which focuses on providing students with the required language for their specializations. ESP is a student focused way to deal with technical resources for a foreign language (Hutchinson et al., 1994) ; it assists to every single person who wants to create capability information in a specific discipline such as different areas of knowledge (Talebinezhad, 2001).

In Ecuador, despite of having a low English level, the impact around the world is recognized for the effort that people is doing to be better. It is important to develop a research project in this perspective because students and professionals around the country are being requested to be able to handle their occupations in English, since it is considered as a lingua franca. Being aware of handle a technical vocabulary or a good quality of the skills, they will be involved in the important role in any academic file plays in the environment.

Checking different research papers around the country, it is noticeable the impact of the Technical Language as a specific purpose. Here is a similarity about the necessity to elaborate a proposal that involves the Technical English in many areas of knowledge, Beltrán et al., 2006; Encalada (2013); Lizcano et al., 2010; Castillo, (2019) state Technical English is essential in the use of specific areas such as computing, electricity-electronics, mechanics, etc. It is essential to design a proposal that adapt a support of materials for any specialty. In their works the ideas are focused in different technical and teaching experience which make it a work with pedagogical and technical foundations.

PHILOSOPHICAL FOUNDATION

Reviewing different books and scientific articles was hard researched to pinpoint the birth of ESP though several authors.

> Abdullah (2001: 345); Upton (2012: 11) – cite Swales' (1985: x) suggestion that Barber's 1962 article on "Some measurable characteristics of modern scientific prose" marks the first academic study in what we now call ESP where Barber outlines the ways in which scientific English differs from general English. However, as Johns points out (2013: 7), we can already see a major interest in ESP developing not long after the end of World War II. The spread of technology and international trade was closely linked to the predominance of the US as a political and economic force throughout the Western world and, as Hutchinson and Waters (1987: 6) have observed: The effect was to create a whole new mass of people wanting to learn English, not for the pleasure or prestige of knowing the language, but because English was the key to the international currencies of technology and commerce (Williams, 2014, pp 137-150).

In 1930s, William S. Gray from the University of Chicago developed a foul-leveled model of reading skills. Gray's model focused on word perception, comprehension, reaction to the text, and making connections. This model provided the foundation of the basal readers used during the 1940s and 1950s. (Sadoski, 2004) Among the four language skills, reading may be the most extensive and profound skill studied by experts in the field of language teaching. For decades, the results of research on the nature of reading (how people learn to process textual information) have formed comparative theories about what is most effective in teaching reading.

Therefore, language educators must choose from a variety of teaching methods and techniques to enable students to learn to read in a second language (SL) or a foreign language (FL).

EPISTEMOLOGICAL FOUNDATION

Herrera, L., Medina, A., & Naranjo G. (2005). It states: "it is the subject-object relationship base on analyze them in a network of interrelations and interactions in the dynamics of the contradictions that promote profound qualitative changes" (pag.21). Since the 80s, Technical English has generated new knowledge in the different educational and professional areas, according to each necessity it will provide easy communication with people in different parts of the world specifically in their specialized areas since English is the most widely spoken language so far. The use of Technical English has been letting people into scientific, medical, technological areas through it has been possible to go forward communication and abroad knowledge in the different fields.

ONTOLOGICAL FOUNDATION

It must start by highlighting that the human being is capable to adapt him to the environment that surround, in addition, it is important a good relationship between students and teachers, in these ways, the educational cycle will get a positive turn in the events. Learning English is a fundamental necessity, since it permits to interact around the world utilizing substantial wording for the comprehension of them, regardless of whether they are around science or innovation. It permits to create and to be involved in different fields of correspondence and information around them, in this situation, they acknowledge to use slangs and foster the not really settled in their academic process.

AXIOLOGICAL FOUNDATION

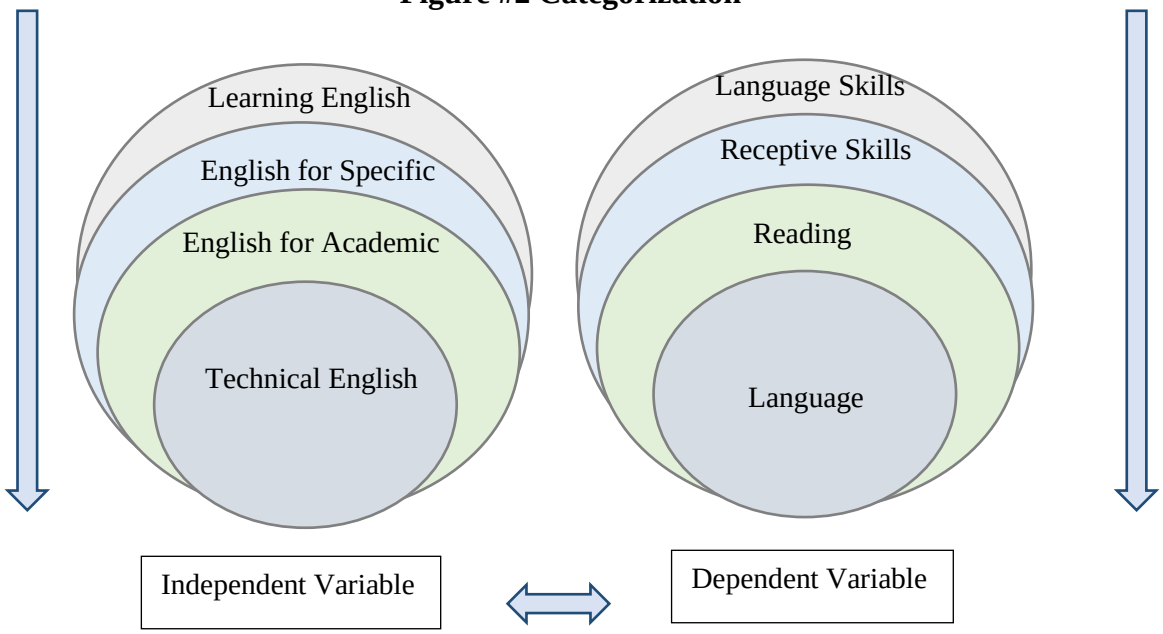
In general settings, learners are surrounded by their mother tongue, for this reason, it is difficult for him to develop the Foreign English Language which requires a real contact of the language for the learning to be enriching. The teacher and the students must be aware that the use of Technical English is essential, so they must keep updated on the advances of the language and the different areas in which its use is important, in this way they can collaborate with the advancement of learning of the dialect. Its research is going to establish a didactic material based on the learning of technical vocabulary, basic grammar and the development of reading, it will help to the students can understand manuals or papers written in Technical English.

LEGAL FOUNDATION

The Ecuadorian Legal Framework has established many guidelines for the education system and mainly aims to develop language learning at all levels of the Ecuadorian system. The education has the basic services which are provided to everyone. The “Constitución Política de la República del Ecuador”, Chapter 2, Article 6, Part J: Ensuring the use of digital literacy, ITC’s in the educational process and promoting education in the context of social activity and manufacturing. The “Estatuto de Régimen Académico” in Ecuador, approved by the “Consejo de Educación Superior” (CES) in 2013, established that the “Instituciones de Educación Superior” (IES) aims to teach and learn foreign languages. guarantees a level of language proficiency to know the requirements of a bachelor's degree for a third-degree major and must be arranged or approved at the start of study.

FUNDAMENTAL CATEGORIES

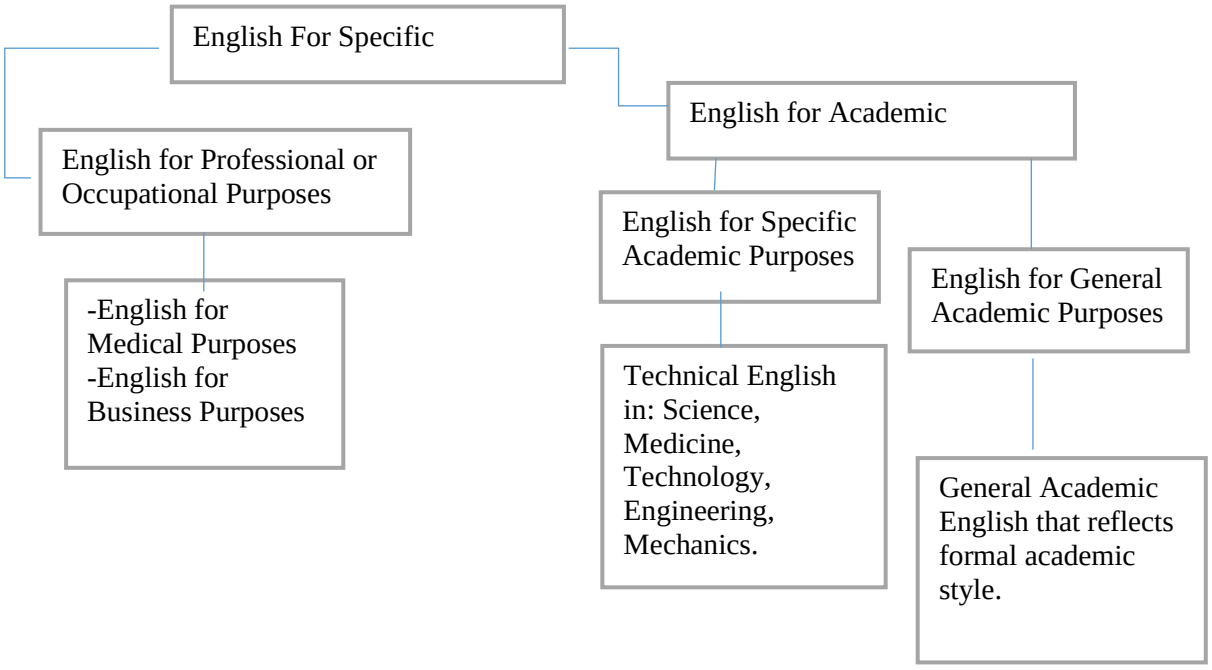
Figure #2 Categorization



Author: Francisco Vera López.
Source: Direct Investigation.

2.1.1 INDEPENDENT VARIABLE INTERRELATED GRAPHIC

Figure #3 Independent Variable



Author: Francisco Vera López.
Source: Jordan, R., R., (1997) y Dudley-Evans, T., & St John, M. J. (1998).

2.1.2 INDEPENDENT VARIABLE CONCEPTUALIZATION

Learning English as a Second Language includes the development of capacities that allow to act in interpersonal and intrapersonal activities that help in the practice of acquiring a language (Burns & Richards, 2018). In the 20th century, new methodologies were introduced that focused on more creative and attractive techniques, for that reason, English is considered the most important language worldwide because it allows access to greater sources of knowledge and information. Having a second language is a competition around the world in which English is a requirement to increases the opportunity of obtaining a good job.

There are some factors that influence the process of acquiring a second language such as: intelligence, aptitude, personality, and motivation (Khasinah, 2014). The teacher must promote among their students' different activities that favor the development of different intelligences. Aptitude is one of the factors related to personality being an extrovert or introvert influence. It is vital that the teacher contributes through different activities the degree of self-esteem and confidence necessary for everyone to be a participant in linguistic progress. Motivation is directly related to success in learning foreign languages. A student who is motivated by his teacher and who has the necessary resources will be able to quickly achieve the objectives set in the learning process.

English for Specific Purposes (ESP) has been used as a "goal directed or a need of analysis", which is interpreted as the study through a desired to achieve a goal, based on the analysis of needs, where is intended to specify what the student is going to accomplish through the use of English (Basturkmen, 2006). It is related or designed for specific disciplines, and to identify the needs, with reference to specific teaching situations other than general English. It is focused on language, skills, and speeches appropriate to this type of situation. English for

Specific Purposes was designed for students who want to improve their English in a professional field of study normally taught in higher education (Anthony, 2018). Having an overall overview about ESP can be referred into two ways, as a class given in the teaching-learning process of English in the various specialties and the use of English for communicative purposes in specific situations, or for a specific purpose.

Due the importance of this foreign language around the world, it has become the second language in many countries and due to the need to communicate (Srinivas, 2019). Taking advantage of the language, it can be used in different ways like commerce, tourism, technology, scientific, business, IT, industrial purposes, medicine, which means a specific English purpose for each knowledge area. The ESP emerged through research in the methodology of the language teaching, directing said research to other fields, considering the needs and interests of students in relation to the foreign language for the success and effectiveness of learning it (Master, 2005). In addition, it is important to make a detailed analysis of the needs of the learners since this way the students will be directly involved in the teaching-learning process because they will not feel frustrated by not having interest in what they are learning.

As a reference of the purpose for ESP means a worldwide necessity to strength an academic program for learners who want to specialize in the English context, it will be valuable for their resume and academic profile. English for Academic Purposes (EAP) is a program that currently includes an incredible development inside an academic field. It alludes to the necessities of an understudy in a specific subject. It has had such an effect that it has been executed in various instructive establishments so understudies and educators can create at a level that is further developed and concentrated by each subject where they are drenched (Liyanage,

2001). There are some disciplines of Academic Purposes such as Topography Science, Mechanical Area, Structural Design purposes, Civil Designing, Electronics designing, etc.

EAP is divided into: English for General Academic Purposes (EGAP) which refers to the teaching of skills and language that is common in all teaching disciplines or *study skills*, skills and abilities in academic development; and English for Academic Specific Purposes (ESAP) (Jordan, 1997). It allows to the educating of qualities that recognize one discipline from another, the language that is needed in a specific subject. Here you can distinguish the language constructions, slangs and important abilities in mastering a specific field. Its division is English for Science and Innovation Purposes focused on the discipline of investigation that it is being used for the present insightful work.

According to Carrillo, M. (2016) specifies about Technical English as an own style immersed with a progression of underlying and semantic attributes of the language that makes up a quiet and uncommon method of communicating thoughts. Technical English does not have an accurate definition, rather it serves to allude an alternative style of English. Also, it is centered around the kind of slangs that will be utilized and to get texts or manuals based on logical context.

The objective of Technical English is derived from ESP and ESAP (Yazi, 2019). It has a design according to the linguistic needs of a specific discipline focused on the development of reading comprehension. The main objective is for the beneficiaries who understand technical texts and scientific papers in English, but for full development it is also necessary to develop the skills of speaking, listening, and writing as a complement.

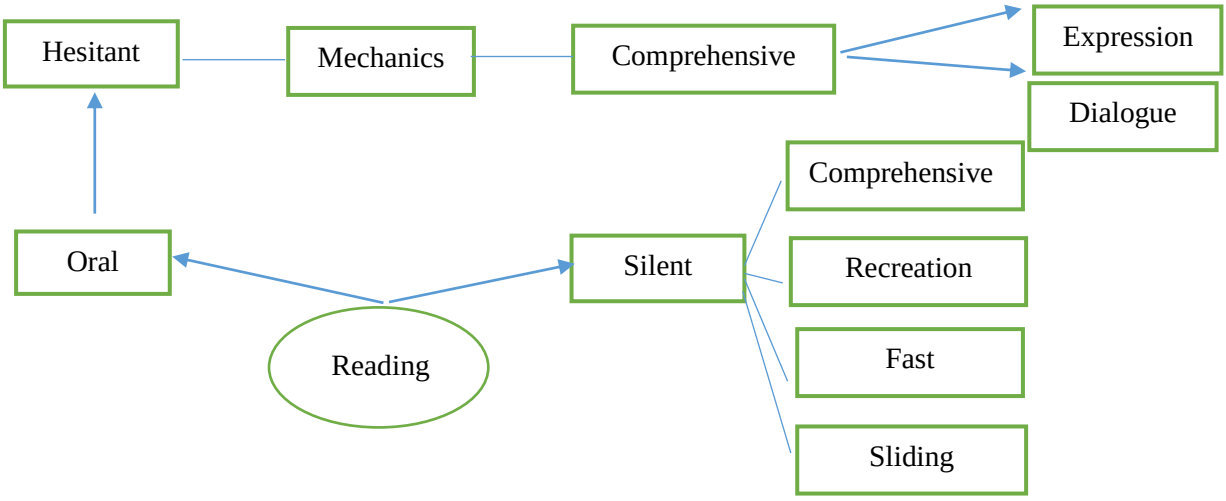
An advantage of Technical English is the learning of English in specific sectors such as an academic field within industrial mechanics. A fact is an among of students, professionals and

national and foreign companies linked to the Ecuadorian industry who require a technical use of language. This provides an alternative for training a professional completely qualified in different areas of knowledge. The importance is linked for students, workers or professionals who exercise a specific type of industry, learning English emphasized in certain areas is a tool based on Technical or specialized English, so it is of vital importance since it not only offers a space to learn and practice the language but also allows the development of a technical vocabulary that facilitates communication and the performance of different tasks more effectively (Bracaj, 2014). It is very important to note that reading comprehension is a required skill in learning English for science and technology. In the types of readings that are focused on those mentioned above, appropriate texts should be used for a certain specialty, and characterized by being designed to provide content and not simply to teach the language.

According to Alcaraz, (2000) distinguishes three groups in this type of Technical English like: as a sort of slangs that alludes to every single words can be distinguished in a similar field. Its lexicon is technical in nature. Its terminology is specific, however there is vocabulary that presents a particular conceptual difficulty due to its "core" nature; Sub-Technical Vocabulary also called “semi-technical”, made up of common words. This gathering of words has gained another significance inside a specific area of information. Example: *File; File an application; and* General Vocabulary Its use is frequent, they maintain the same meaning, inside and outside a specialty, it is all the words of a general lexicon, they are important due to the frequency of use. Example: *Performance, prove, test.*

2.1.3 DEPENDENT VARIABLE INTERRELATED GRAPHIC

Figure #4: Dependent Variable



Author: Francisco Vera López.
Source: Direct investigation.

2.1.4 DEPENDENT VARIABLE CONCEPTUALIZATION

The language according to Echeverría (2005) "it is born between the social interaction of human beings, where the participants share the same system of signs gesture, sounds, etc." (p.50). Language is a resource with which it is possible to communicate. Through language, humans and animals can communicate either orally, in writing, in the body, or using any other resource with which communication can be made possible. In human's language is much more advanced than in other species. It is a set of articulated sounds, through which the human being expresses thoughts or feelings.

Reading is not the basic translation of a composed code yet disentangling, furthermore understanding and deciphering a message (Espinosa, 1998). Reading is the main interaction that the reader has created from the language, it is characterized as a cycle where the person catches a progression of images making them an intelligent arrangement. In addition, it is the capacity to get words and different pointers. It is likewise characterized as the interpretation of images or

codes for the agreement. In perusing we can discover codes that can be visual, hear-able and material. Perusing includes a connection between the text and the lecture.

Different writers indicate that to practice the genuine demonstration of reading, there are three basic abilities: to decipher suggests the capacity to perceive words; to comprehend alludes to the capacity to decipher the importance of what is the text and to absorb it is the capacity to think fundamentally and imaginatively regarding what is perused, just as to respond to what the author has communicated. Also, the significance of Reading as an ability that is instructed since the beginning of the dialect can improve the mentally through the reinforcing of the information where deals the translation and creative mind positively.

The process of reading has an essential purpose that is to interact actively with the text or in a dialogue in which various skills of thought and expression are activated. The teacher's action is decisive in each of the stages: in the pre-reading (before reading, activating the students' previous knowledge, updating their information, allowing them to define their objectives; during the reading phase, indicating the strategies that favor understanding and, in the post-reading (at the end of the process), as support to deepen understanding. The Curriculum Reform proposes the following steps within the reading process, the first is pre-reading, secondly the reading, and finally the post-reading.

HYPOTHESIS

H1: The technical vocabulary influences the development of the Reading skills in the students of Industrial Engineering from UPSE.

H0: The technical vocabulary does not influence the development of the Reading skills in the students of Industrial Engineering from UPSE.

VARIABLES

Independent Variable:

Technical English (Cause)

Dependent Variable:

Reading Skills (Effect)

CHAPTER III
METHODOLOGICAL FRAMEWORK

3.1 APPROACH

The present research has a quantitative approach, since it will be able to carry out numerical measurements, statistical calculations, etc. Field research was used, because through this modality the problem can be analyzed, the causes that originate it can be determined, the effects produced by said phenomenon can be determined. In addition, it represents an advantage since the analysis, description and interpretation of data on the use of Technical English is carried out in the place of the events "Universidad Estatal Peninsula de Santa Elena" for students of Industrial Engineering Major in the area of Industrial Mechanics.

3.2 MODALITY

Bibliographic-documentary research

Bibliographic research is essential to use it as a support to the different conceptualizations, criteria and theories, which can guarantee the investigative work. To carry out the investigation of this problem books and web pages are helpful.

3.3 TYPES OF RESEARCH

Exploratory research

This type of research is going to be used since its objective is to examine a topic or research problem which has rarely been studied or which has not been addressed before. The present investigation has an exploratory level, and it will allow to determine the level of knowledge of Technical English in which the students of Industrial Engineering Major in the area of Industrial Mechanics from UPSE.

Descriptive research

Considering the descriptive research is an important method to understand the nature of the Technical English to obtain a development of reading skills. Gathering quantifiable information to apply it in an illustrative graphic with analysis of the students and teachers surveyed will be important to know their opinion of this necessity.

3.4 POPULATION AND SAMPLE

The universe of this study consists in 48 students from the 2021-I academic period along with sixth and seventh semester of Industrial Engineering and 2 teachers from the English area of the "Universidad Estatal Peninsula de Santa Elena".

Chart #1 Population and Sample

POPULATION	SAMPLE
Industrial Engineering	48
English Teachers	2
Total	50

Author: Francisco Vera López.
Source: Students and Teachers from Industrial Engineering

3.5. Operationalization of Variables

3.5.1 Operationalization of Independent Variable (Technical English)

Chart #2 Technical English

CONCEPTUALIZATION	DIMENSIONS	INDICATORS	ITEMS	TECHNIQUES AND INSTRUMENTS

It serves to refer to a different style from **technical issues** or scientist. It is focused on the type of **vocabulary** to be used, with the purpose of **understanding** texts and manuals specifically that are scientific or technical.	-Technical issues. -Vocabulary. -Comprehension.	-Technical English -Sub-technical. -General of frequent use in the area. -Reading material.	1. Are the vocabulary acquisition activities appropriate for your learning? 2. Do you practice English words referring to your specialty during classes? 3. Does the English teacher socialize technical topics in English according to your specialty during classes? 4. Does the textual material used in English classes promote the learning of Technical English? 5. Does the "Universidad Estatal Peninsula de Santa Elena" have technical modules written in English?	T: Survey I: Questionnaire

Author: Francisco Vera López.
Source: Direct investigation.

3.5.2 Operationalization of Dependent Variable (Reading Skills)

Chart #3 Reading Skills

CONCEPTUALIZATION	DIMENSIONS	INDICATORS	ITEMS	TECHNIQUES AND INSTRUMENTS
It is the process in which the human being captures a series of symbols and decodes them making them a logical sequence. It is the ability to understand words and other signs, in which three steps can be	-Pre-reading -Reading -Post reading	-Anticipation -Exploration -Perception -Comprehension -Verification of understanding of the text. -Comprehension activities.	6. Are the strategies used in Reading developed adequately for your understanding? 7. Are the Reading activities related to your specialty? 8. Does your English level allow you to understand readings written in Technical English?	T: Survey I: Questionnaire

recognized: **Pre-reading**, quickly exploration of the text **, reading** , comprehension of the text, **Post-reading,** verify the understanding of the text.			9. Is the learning of Technical English important for your academic and professional development? 10. Does the use of a methodological guide containing technical vocabulary in English and basic grammar help you understand technical readings in English?	

Author: Francisco Vera López.
Source: Direct investigation.

3.6 DATA COLLECTION PLAN

Collecting the information can be interpreted through statistical charts and thus be able to have an idea of the magnitude of the problem.

Chart #4 Collection Plan

BASIC QUESTIONS	EXPLANATION
1.- What for?	To determine the use of Technical English and the development the reading skill in the students of Industrial Engineering Major from "UPSE".
2.- What people or objects?	Independent Variable: Technical English. Dependent Variable: Reading Skills.
3.- About what aspects?	The aspects raised in the operationalization of variables.
4.- Who?	Francisco Xavier Vera López.
5: Whom?	Teachers of the English area and students of Industrial Engineering specialty from UPSE.

6.- When?	Academic Period 2021-I.
7.- Where?	"Universidad Estatal Peninsula de Santa Elena".
8.- How many times?	Just one time
9.- How?	Applying surveys to English teachers and students from Ind. Eng. at UPSE.
10.- With what?	The instrument to be used is the questionnaire.

Author: Francisco Vera López.
Source: Industrial Engineering

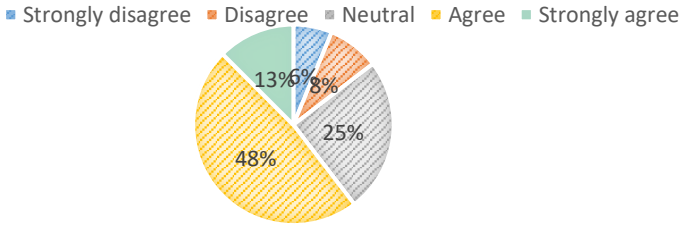
3.7 PROCESS AND ANALYSIS PLAN

It will understand the real situation of the surveyed area, providing to the search one or more solutions to the problem raised by the researcher. It will assess the quality of the data, seek a greater understanding of observed or unobserved relationships.

3.8 ANALYSIS OF RESULTS

2.1.5 STUDENTS SURVEY

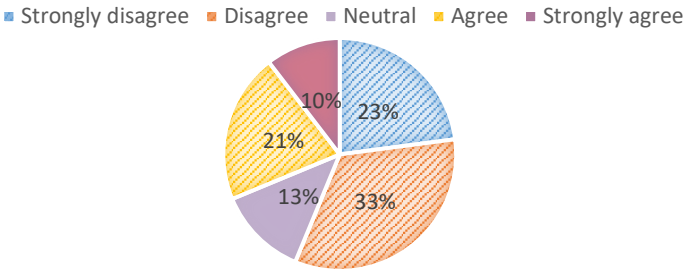
Question #1: Are the vocabulary acquisition activities appropriate for your learning?
Figure #5: Acquisition of vocabulary



Author: Francisco Vera López.
Source: Students Survey.

Of the 48 students surveyed, 23 of them answered agree, which is equivalent to 48%, while 4 indicate disagree, which is equivalent to 8%. It shows that most students know a basic vocabulary in English. Constituting this in a statement, as the quote by (Alarcon, 2002) "vocabulary is conceived as part of the development of capacities" (p. 124). The capabilities have been developed in an appropriate way.

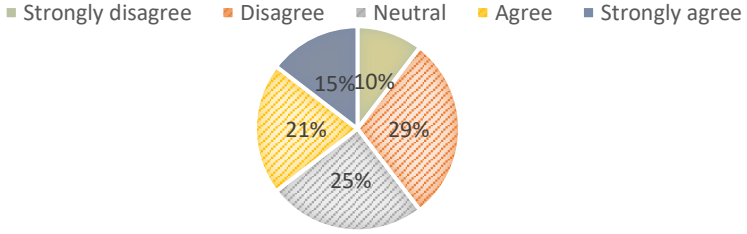
Question #2: Do you practice English words referring to your specialty during classes?
Figure #6: Specific vocabulary



Author: Francisco Vera López.
Source: Students Survey.

Of the 48 students surveyed, the analysis shows that 10 of them answered agree, which is equivalent to 21%, while 16 students indicate disagree, which is equivalent to 33%. A high percentage of student's state that technical terminology in English is not practiced during their classes. (Åkerberg, 2005) says: "the acquisition of the appropriate vocabulary is essential to be successful in the use of a second language" (p. 144). The learning of the English language can be developed in a better way if it is directed to the area of development of the students.

Question #3: Does the English teacher socialize technical topics in English according to your specialty during classes?
Figure #7: Socialization of technical topics

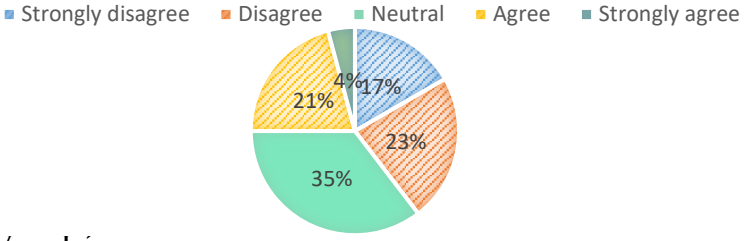


Author: Francisco Vera López.
Source: Students Survey.

Of the 48 students, twelve of them answered neutral which is equivalent to 25%, while fourteen indicate disagreement which is equivalent to 29%. (Encalada, 2013) states "communicative competence and listening comprehension would be needed as a complement for the effective mastery of technical vocabulary". Most of the student's state the teacher does not socialize technical issues in English during the classes because oral and listening skills are not being developed in a correct way.

Question #4: Does the textual material used in English classes promote the learning of Technical English?

Figure #8: Use of textual material

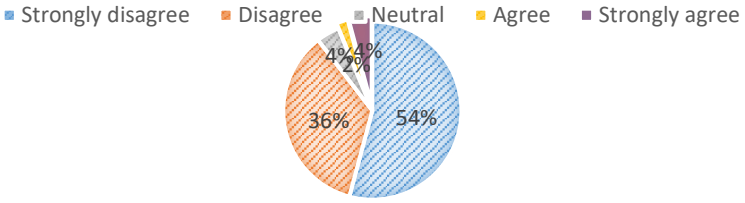


Author: Francisco Vera López.
Source: Students Survey.

The survey shows that ten of them agree, which is equivalent to 21%, while seventeen indicate neutral as an equivalent of 35%. A high percentage of the students surveyed agree that the textual material used in classes is neutral to the specialty they are studying, such as Industrial Mechanics, it diverts their learning to other subjects. Materials containing Technical English related to industrial mechanics should be used. (Encalada, 2013) points out that technical vocabulary must be used "in various fields where they have a specific and specialized purpose."

Question #5: Does the "Universidad Estatal Península de Santa Elena" have technical modules written in English?

Figure #9: Technical modules

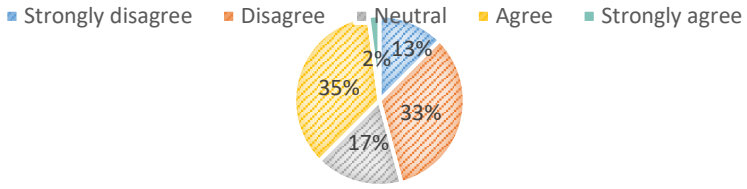


Author: Francisco Vera López.
Source: Students Survey.

Of the 48 students surveyed, two of them answered they strongly agree, equivalent to 4%, while 26 indicate that they strongly disagree at 54%. A high percentage of students affirm that the university does not have modules with technical contents in English while the minority of them assure the opposite, to which it can be concluded that the Industrial Engineering career, despite being technical, does not exist technical modules in English and it should be used during the English course.

Question #6: Are the strategies used in reading developed adequately for your understanding?

Figure #10: Strategies for reading

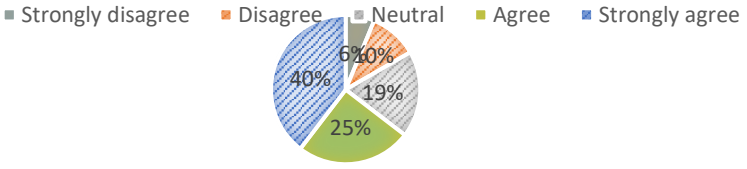


Author: Francisco Vera López.
Source: Students Survey.

Of the 48 students surveyed, seventeen of them answered agree, which is equivalent to 35%, while sixteen indicate disagree, which is equivalent to 33%. Espinoza, C., (1998) states: "Reading-writing strategies consist of a series of systematic activities aimed at encouraging the taste for reading" (p.62). A high percentage considers that reading strategies are developed in an adequate way, but likewise the counterpart mentions that there is no clear understanding of what they read and that they lose interest in it. It should be considered that the development of reading comprehension is the most important in learning Technical English.

Question #7: Are the Reading activities related to your specialty?

Figure #11: Reading activities

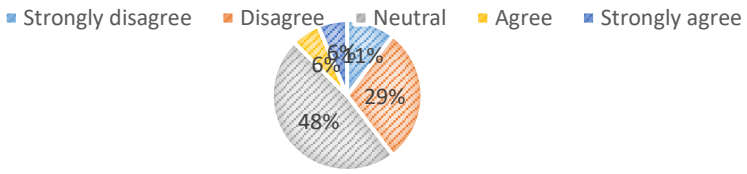


Author: Francisco Vera López.
Source: Students Survey.

Of the 48 students surveyed, nineteen of them responded strongly agree, which is equivalent to 40%, while five indicate disagree, which is equivalent to 10%. A high percentage consider that the readings used in class should be related to their specialty. (Encalada, 2013) considers it important "to understand both reading and writing in order to understand specific texts and handle terminology appropriate to the use of the person who requires such knowledge on the subject." It should be noted that most of the manuals and texts on machinery and tools used by students will be written in English.

Question #8: Does your English level allow you to understand readings written in Technical English?

Figure #12: Reading comprehension

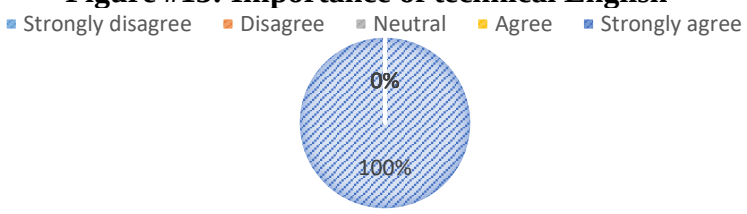


Author: Francisco Vera López.
Source: Students Survey.

Of the 48 students, twenty-three of them responded to be neutral, which is equivalent to 48%, while thirteen indicate disagree, which is equivalent to 29%. Most of the students said due to the lack of knowledge about technical terminology their level of English is not adequate, and they remain neutral with which they can understand readings or texts written in technical English. As stated by: Åkerberg, M. "Without a broad vocabulary we will not be able to use the structures and functions that we have been able to learn to achieve understandable communication" (p.144).

Question #9: Is the learning of Technical English important for your academic and professional development?

Figure #13: Importance of technical English

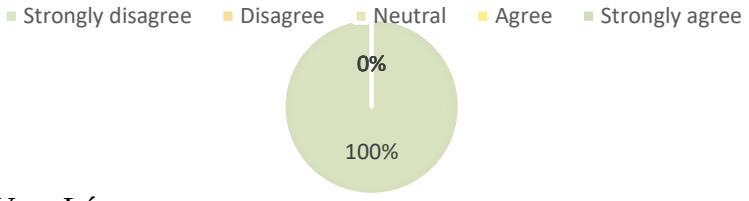


Author: Francisco Vera López.
Source: Students Survey.

All responded strongly agree, which is equivalent to 100%. (Beltrán, 2006) "Mastering a foreign language in the training of professionals is an aspiration, and a declared or accepted objective in the modern world. The foreign language as an instrument of study or work shows interest these days ". The command of Technical English opens more job opportunities in the different existing areas. For this reason, they consider that English is important in their student cycle and their professional life.

Question #10: Does the use of a methodological guide containing technical vocabulary in English and basic grammar help you understand technical readings in English?

Figure #14: Understanding technical readings



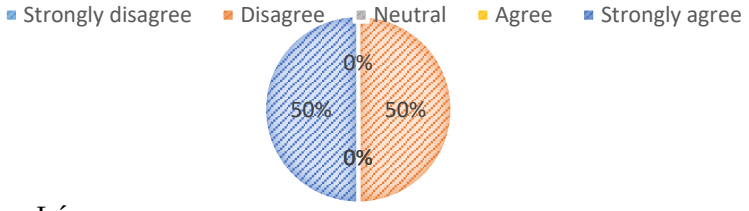
Author: Francisco Vera López.
Source: Students Survey.

Of the 48 students surveyed, all of them responded totally agree, which is equivalent to 100%. Encalada, (2013) states "the person who is going to learn Technical English must handle a specialized vocabulary in the subject to which he is dedicated, which facilitates the understanding and manipulation of texts, documents, writings, technical manuals". According to the author, and the data obtained, all the students agree that the use of a module will help in understanding texts and manuals written in Technical English.

2.1.6 TEACHERS SURVEY

Question #1: Do you use English words as an "industrial machine" or "tools" during English classes?

Figure #15: Acquisition of vocabulary

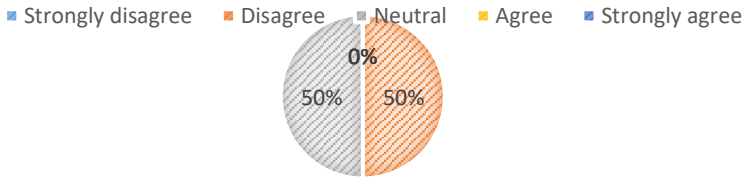


Author: Francisco Vera López.
Source: Teachers Survey.

Of the 2 teachers surveyed, one of them responded strongly agree, which is equivalent to 50%; while another teacher indicates 50% disagreement. Alarcón, E. (2002) "vocabulary is conceived as part of the development of capacities" (p. 94). Only one of the teachers in the English area states that he knows about technical terminology such as the names of machines used in the specialty of industrial mechanics, while the other percentage indicates that he does not know the terms.

Question #2: Do you practice English words referring to the specialty of Industrial Mechanics in your classes?

Figure #16: Specific vocabulary

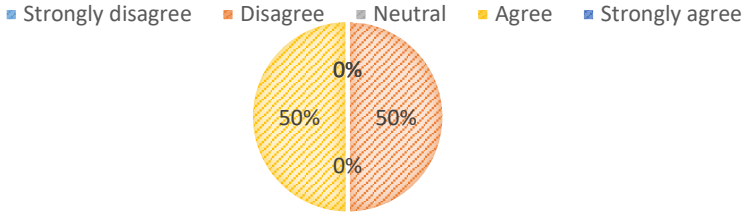


Author: Francisco Vera López.
Source: Teachers Survey.

Of the 2 teachers surveyed, one indicates being neutral while the other disagree. Åkerberg, M. (2005) cites: "the acquisition of the appropriate vocabulary is essential to be successful in the use of a second language" (p.144). According to the results obtained, the teachers answered during their classes do not practice the terminology referring to the specificity of the students.

Question #3: Do you socialize technical topics in English according to the specialty during your classes?

Figure #17: Socialization of technical topics

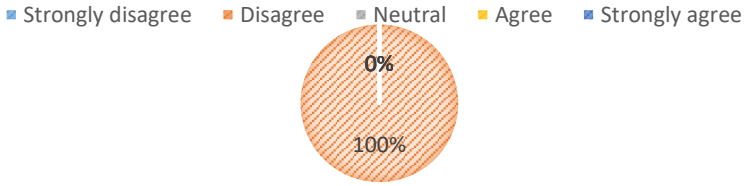


Author: Francisco Vera López.
Source: Teachers Survey.

Of the 2 teachers surveyed, one of them agree, it is equivalent to 50%; while the other indicates disagree that it is equal to 50%. (Encalada, 2013) states that: "in the technical vocabulary in English it is good to mention that communicative competence and listening comprehension would be needed as a complement for the effective mastery of said vocabulary". Only one of the teachers responded that he/she socialize topics related to Industrial Mechanics during their classes, while the other percentage states the opposite, which indicates up to this point that the teachers do not have a knowledge of Technical English, which is why there are ignorance of the subject also in the students.

Question #4: Does the textual material used in English classes promote the teaching-learning process of Technical English?

Figure #18: Use of textual material

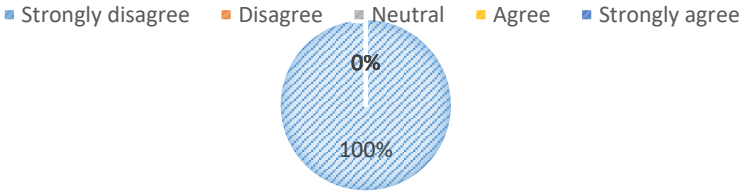


Author: Francisco Vera López.
Source: Teachers Survey.

According to the data obtained, the two teachers surveyed responded disagree, which is equivalent to 100%. (Encalada, 2013) points out that technical vocabulary must be used "in various fields where they have a specific and specialized purpose." All the teachers surveyed state that the textual material used during their classes does not promote the teaching of Technical English with reference to the specialty of Industrial Mechanics.

Question #5: Does the "Universidad Estatal Península de Santa Elena" have technical modules written in English?

Figure #19: Technical modules

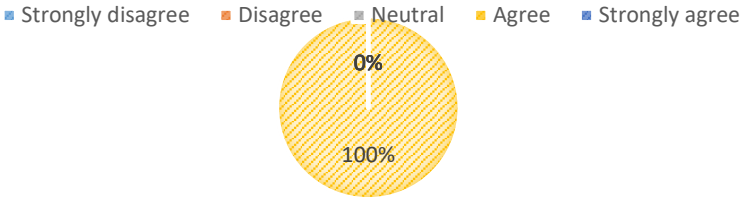


Author: Francisco Vera López.
Source: Teachers Survey.

According to the data obtained in the survey, the two teachers responded that they totally disagreed, which is equivalent to 100%. All of them state that the university does not have technical textual material written in English, from which it can be deduced that said material has not been used during the English class to strengthen technical knowledge in English or to understand them.

Question #6: Do you strategies used in Reading developed are adequately for your teaching process?

Figure #20: Strategies for reading

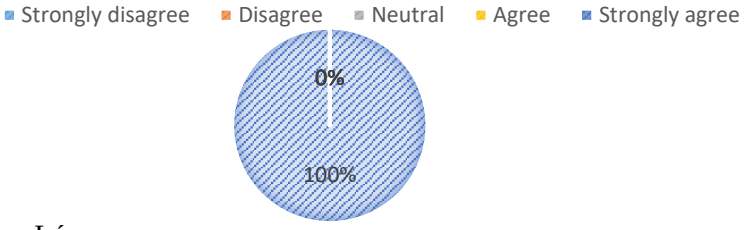


Author: Francisco Vera López.
Source: Teachers Survey.

According to the data obtained, two of the teachers surveyed said agree, which is equivalent to 100%. All of the teachers surveyed state that the strategies used in the Reading activities are developed in an adequate way for a good understanding, as is stated by Espinoza, C., (1998) "The reading-writing strategies consist of a series of activities systematic aimed at encouraging the taste for reading "(p. 62); It should be emphasized, in addition to the taste for reading, the understanding of the readings must be clear.

Question #7: Do the Reading activities be related to the specialty that your students are studying?

Figure #21: Reading Activities

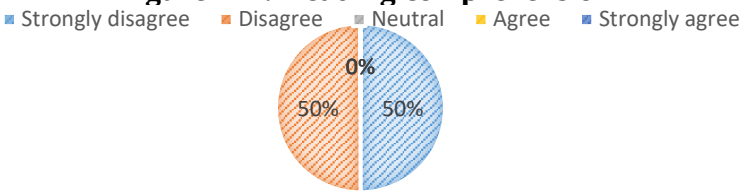


Author: Francisco Vera López.
Source: Teachers Survey.

According to the teachers surveyed responded strongly agree, which is equivalent to 100%. Based on their response, readings used during English classes should be related to the specificity of Industrial Mechanics, constituting a great advance for optimal student learning. (Encalada, 2013) considers important "reading and writing comprehension in order to understand specific texts and handle terminology appropriate to the use of the person who requires such knowledge on the subject."

Question #8: Does the students' level allow them to understand readings written in Technical English?

Figure #22: Reading comprehension

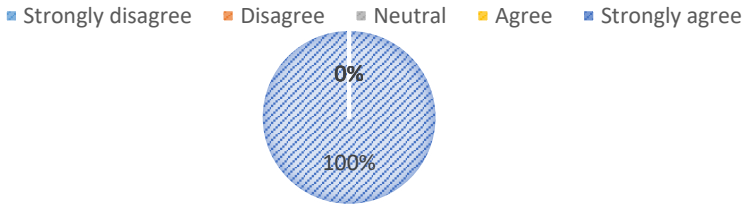


Author: Francisco Vera López.
Source: Teachers Survey.

According to the data, two of the teachers responded to the equivalence of disagree. Åkerberg, M. (2005) states: "Without a broad vocabulary we will not be able to use the structures and functions that we have been able to learn to achieve understandable communication" (p.144). All the teachers surveyed agree that the level of English that the students possess will not allow them to understand texts or technical manuals written in English, representing a great problem when it comes to the correct handling of machinery, tools and performance in their work.

Question #9: Is the teaching-learning process of Technical English important for the academic and professional development of your students?

Figure #23: Importance of technical English

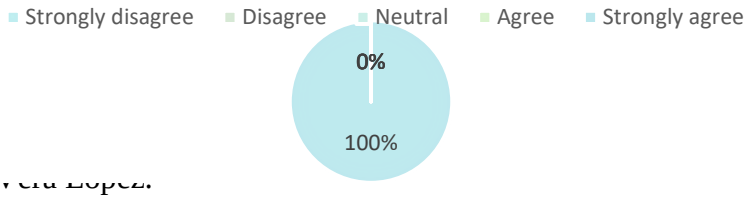


Author: Francisco Vera López.
Source: Teachers Survey.

According to the data, the two teachers totally agree, which is equivalent to 100%. They state that learning technical English is important for students considering the major in which they are. (Beltrán, 2006) "Mastering a foreign language in the training of professionals is an aspiration, and a declared or accepted objective in the modern world. The foreign language as an instrument of study or work shows interest these days".

Question #10: Does the use of a methodological guide containing technical vocabulary in English and basic grammar help to students understand technical readings in English?

Figure #24: Understanding technical readings



Author: Francisco Vera López.
Source: Teachers Survey.

According to the data, all the teachers strongly agree, which is equivalent to 100%. It shows that they would like to use in their classes a module that allows them to teach technical vocabulary and basic grammar in English to help students understand technical readings written in English. English. (Encalada, 2013) states "the person who is going to learn Technical English must handle a specialized vocabulary in the subject to which he is dedicated, which facilitates the understanding and manipulation of texts, documents, writings, technical manuals".

In the first survey applied to students, it demonstrates a real fact about the influence of the Technical English in their profile, they really want to check it during the English classes, in the same way to obtain a development in their reading skills. In the teacher's survey, both of them agree with the idea to design a technical course based in the Industrial Mechanic area for students of Industrial Engineering major at UPSE. These students think English for Specific Purpose is important, the survey was directed into the two variables to gather truthful information with the aim to identify the necessity. Therefore, the results show that teachers think it is priority to design a proposal for their benefit. A methodological guide should be applying it in the final module of their English classes to empathize their English level.

Thus, everybody is accorded to include the teaching of Technical English in their curriculum and increase the motivation of the English learning process through practice with a vocabulary based on their specialty. It can be understood as the integration of a new didactic resource based on activities which offers the opportunity for 'natural' learning inside the classroom. These results show that the survey answers agree on the application the proposal that provide students with the opportunity to improve the reading skill. Based on the answers of this survey, it can be concluded that the data gathered through these two surveys were useful for the development and evaluation of this project.

CHAPTER IV
PROPOSAL

METHODOLOGICAL GUIDE TO IMPROVE TECHNICAL ENGLISH AND ITS DEVELOPMENT IN READING SKILLS FOR STUDENTS OF INDUSTRIAL ENGINEERING MAJOR IN THE AREA OF INDUSTRIAL MECHANICS AT "UNIVERSIDAD ESTATAL PENÍNSULA DE SANTA ELENA". LA LIBERTAD. PROVINCE OF SANTA ELENA. ACADEMIC PERIOD 2021-1.

4.1 INFORMATIVE DATA

Institution: Universidad Estatal Península de Santa Elena.
Location: La Libertad
Beneficiaries: Teachers - Students of Industrial Engineering Major in the Area of Industrial Mechanics.
Estimated time: 8 weeks
Beginning: July 2021.
Ending: September 2021.
Tutor: Ing. Verónica Isabel Vera Vera MSc.
Researcher: Francisco Xavier Vera López

4.2 BACKGROUND OF THE PROPOSAL

After a hard investigation about topics related to the present proposal, there have been any results founded. Exploring the viewpoint of the modern designing of a course for learners of Industrial Engineering Major and English teachers from the Language Center permit to do a methodological guide to help the knowledge of industrial mechanics to be developed in their profile such that they could work on their insight in their specialty by doing a total course of Technical English. It is recommendable that during their fourth module by the Language Center

they must apply the methodological guide to upgrade the English Level based on the Technical English.

4.4 OBJECTIVES

4.4.1 General Objective

To develop a methodological guide in the area of English to improve the reading skills in students of Industrial Engineering Major in the Area of Industrial Mechanics at "Universidad Estatal Península de Santa Elena". La Libertad. Province of Santa Elena. Academic Period 2021-1.

4.4.2 Specific Objectives

1. Advance the learning of the reading skills in specific technical topics.
2. Socialize the benefits of the Technical English module for the learning of basic technical vocabulary that will help the development of the skill of Reading in Technical English, with teachers of the English area and students of Industrial Engineering Major.
3. To propose a system of activities in order to improve the technical English for the development of Reading skills in students of Industrial Engineering Major.

4.5 FEASIBILITY

This proposal is feasible to carry out because it has the support of the authorities and teachers of the of UPSE. La Libertad. Province of Santa Elena, for the opening and all the facilities to develop it. It becomes a successful effort for searching with the major population; instructors are engaged on knowing the significance of the right use of the Technical Module in the teaching process; moreover, there is the vital bibliographic access for the development of the methodological guide.

The strategies to be consider for the advancement of the proposal and its execution at UPSE will be dictated by the specialists of the establishment and the scientist. The sociocultural progress that the teachers and students involved in the research will be generated by the result of the research. For the implementation of the proposal, the technological and bibliographic resources available to the educational institution will be counted on.

The proposed methodological guide has the following context in a specific way; where the students of Industrial Engineering Major in the Area of Industrial Mechanics at “Universidad Estatal Península de Santa Elena” will view: A cover of the module, then, the importance, and an index. The course is designed by five units, it has terminology related to Industrial Mechanics, illustrative readings on procedures performed based on their specialty. In the Appendix section, take a look in the number five, here will be the proposal developed.

Chart #5: Course design

UNITS	CONTENTS
Unit 1: Meeting people working in a workshop.	VOCABULARY: Professions. GRAMMAR: Simple present (verb to be). READING: Conversation. USEFULL EXPRESSIONS. GRAMMAR: Simple present (other verbs).
Unit 2: Do you have any tool	LISTENING VOCABULARY: Tools. READING: The use of some tools. GRAMMAR: Countable nouns
Unit 3: Are there any workshop here?	READING USEFULL EXPRESSIONS. VOCABULARY: Names of some tools in a workshop. GRAMMAR: There is / There are. Some / Any.
Unit 4: Areas	VOCABULARY: Materials and parts made in a workshop. GRAMMAR: Adverbs of frequency. Gerund after verbs.
Unit 5: Industrial Mechanics	READING. - *MACHINE CYCLE.*

	-INDUSTRIAL ENGINEERING FOCUS AREAS. *-TOOLS & TECHNIQUES OF INDUSTRIAL ENGINEERING USED IN APPAREL INDUSTRY.*

Author: Francisco Vera López.
Source: Direct investigation.

4.5.1 Operating Model

Chart #6: Planning of the proposal

PHASE	OBJECTIVES	ACTIVITIES	RESOURCES	RESPONSIBLE	TIME
Socialization	To gather information related to the technical module in English for its development.	Socialize on the subject with the authorities and teachers of the English area.	Computer. Slides.	Francisco Xavier Vera López (researcher)	4 days
Planning	To determine the elements that facilitate the use of the guide in the classroom.	Preparation of the Technical English module for industrial mechanics.	Computer.	Francisco Xavier Vera López (researcher)	5 weeks
Execution of the proposal	To develop Reading skills by applying the Technical English Module.	Application of the Technical English module for industrial mechanics.	Computer.	Francisco Xavier Vera López (researcher)	1 week
Evaluation	To review the functionality and benefits of the proposal.	Project monitoring. Application of surveys to English teachers and students.	Computer.	Francisco Xavier Vera López (researcher)	2 days

Author: Francisco Vera López.

CONCLUSIONS

Through the research, it has been determined that the Industrial Engineering Major must have a Technical English program applying activities related to the area of study, so they can have a development in their reading skills and the elaborations of academic works inside or outside the University focused on their specialty.

Based on the theoretical framework analyzed in the research project, it is possible to determine the need to keep the material of the methodological guide updated in collaboration with students and teachers considering a regular review of bibliographic reference focused on English for Specific Purposes.

Through the methodology used in the research project, the needs of the students of the Industrial Engineering Major in the area of Industrial Mechanics of the UPSE were established, which highlights the creation or the design of a methodological guide that involves the Technical English for Specific Purposes to help them to develop their capacity and professional profile.

Once the guide is designed, teachers must be trained with all the contents that it involves on the benefits and advantages of the application of this innovative didactic resource, in this way, students and teachers can make a perfectly use of this resource.

RECOMMENDATIONS

For future research is suggested that encourages the use of Technical English and the advancement of reading abilities using methods, resources and useful techniques in various majors of the “Universidad Estatal Peninsula de Santa Elena” as well as the students feel inspired and get a good comprehension in setting where they are uncovered for a sufficient scholarly preparing and expert turn of events.

It is recommended that the guide be constantly reviewed through an updated gathering of bibliographic, since this guide may be subject to changes based on the needs that are presented in the different study programs.

It is recommended to use different methods that provide the gathering of important data such as the application of Simple Observation that allows to determine the needs and problems of the students; likewise, the application of questionnaires every six months to know the reality of the students' environment.

It is recommended that this guide format can be replicated in other UPSE majors such as Biology, Tourism, Business Administration, Nursing, since the province of Santa Elena is a production benchmark that has several strategic sectors for an economic income so, as a result, any similar proposal can be developed in the different areas of knowledge.

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APPENDIX

APPENDIX #1: AUTHORIZATION TO APPLY THE SURVEY

La Libertad, 25 de agosto del 2021

Mgs Franklin Reyes Soriano.
DIRECTOR DE LA CARRERA DE INGENIERÍA INDUSTRIAL.
Presente.

De mis consideraciones:

Yo, Francisco Xavier Vera López, estudiante de la carrera Pedagogía de los Idiomas Nacionales y Extranjeros de la Facultad de Ciencias de la Educación e Idiomas, tengo a bien expresarle mi más cordial y grato saludo.

El motivo de la presente tiene la finalidad manifestarle que me encuentro realizando mi proyecto de investigación con el tema "TECHNICAL ENGLISH AND ITS DEVELOPMENT IN READING SKILLS FOR STUDENTS OF INDUSTRIAL ENGINEERING MAJOR IN THE AREA OF INDUSTRIAL MECHANICS AT "UNIVERSIDAD ESTATAL PENÍNSULA DE SANTA ELENA". LA LIBERTAD. PROVINCE OF SANTA ELENA. ACADEMIC PERIOD 2021-2.", motivo por el cual le solicito de la manera más comedida se me otorgue la autorización para la realización de una encuesta para los estudiantes de sexto y séptimo semestre en la prestigiosa carrera que usted tiene a bien dirigir. La encuesta ya mencionada servirá de apoyo para el trabajo investigativo brindando datos que servirán para el avance y fortalecimiento en el proceso de enseñanza-aprendizaje del área de inglés para la carrera de Ingeniería Industrial.

Apelando a su buen criterio y ayuda para el avance educativo me despido sin antes agradecerle por la atención que brinda a mi solicitud.

APPENDIX #2: STUDENTS SURVEY

UNIVERSIDAD ESTATAL PENÍNSULA DE SANTA ELENA

FACULTY OF SCIENCES OF EDUCATION AND LANGUAGES

PINE MAJOR

OBJECTIVE: This survey will help to obtain important information for the research project titled: Technical English and its development in reading skills for students of Industrial Engineering Major in the Area of Industrial Mechanics at "Universidad Estatal Península de Santa Elena". La Libertad. Province of Santa Elena. Academic period 2021-1.

INSTRUCTIONS: Please take 5 minutes to answer the following questions. Read carefully each question with its alternatives. Then, choose one alternative to provide an answer (X).

1. Are the vocabulary acquisition activities appropriate for your learning?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

2. Do you practice English words referring to your specialty during classes?

Strongly	Disagree	Neutral	Agree	Strongly agree

disagree				

3. Does the English teacher socialize technical topics in English according to your specialty during classes?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

4. Does the textual material used in English classes promote the learning of Technical English?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

5. Does the institution have technical modules written in English?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

6. Are the strategies used in Reading developed adequately for your understanding?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

7. Are the Reading activities related to your specialty?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

8. Does your English level allow you to understand readings written in Technical English?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

9. Is the learning of Technical English important for your academic and professional development?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

10. Does the use of a methodological guide containing technical vocabulary in English and basic grammar help you understand technical readings in English?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Thanks for your time and cooperation!

APPENDIX #3: TEACHERS SURVEY

UNIVERSIDAD ESTATAL PENÍNSULA DE SANTA ELENA

FACULTY OF SCIENCES OF EDUCATION AND LANGUAGES

PINE MAJOR

OBJECTIVE: This survey will help to obtain important information for the research project titled: Technical English and its development in reading skills for students of Industrial Engineering Major in the Area of Industrial Mechanics at "Universidad Estatal Península de Santa Elena". La Libertad. Province of Santa Elena. Academic period 2021-1.

INSTRUCTIONS: Please take 5 minutes to answer the following questions. Read carefully each question with its alternatives. Then, choose one alternative to provide an answer (X).

1. Do you use English words as an "industrial machine" or "tools" during English classes?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

2. Do you practice English words referring to the specialty of Industrial Mechanics in your classes?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

3. Do you socialize technical topics in English according to the specialty during your classes?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

4. Does the textual material used in English classes promote the teaching -learning process of Technical English?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

5. Does the "Universidad Estatal Península de Santa Elena" have technical modules written in English?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

6. Do you strategies used in Reading developed are adequately for your teaching process?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

7. Do the Reading activities be related to the specialty that your students are studying?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

8. Does the students' level allow them to understand readings written in Technical English?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

9. Is the teaching-learning process of Technical English important for the academic and professional development of your students?

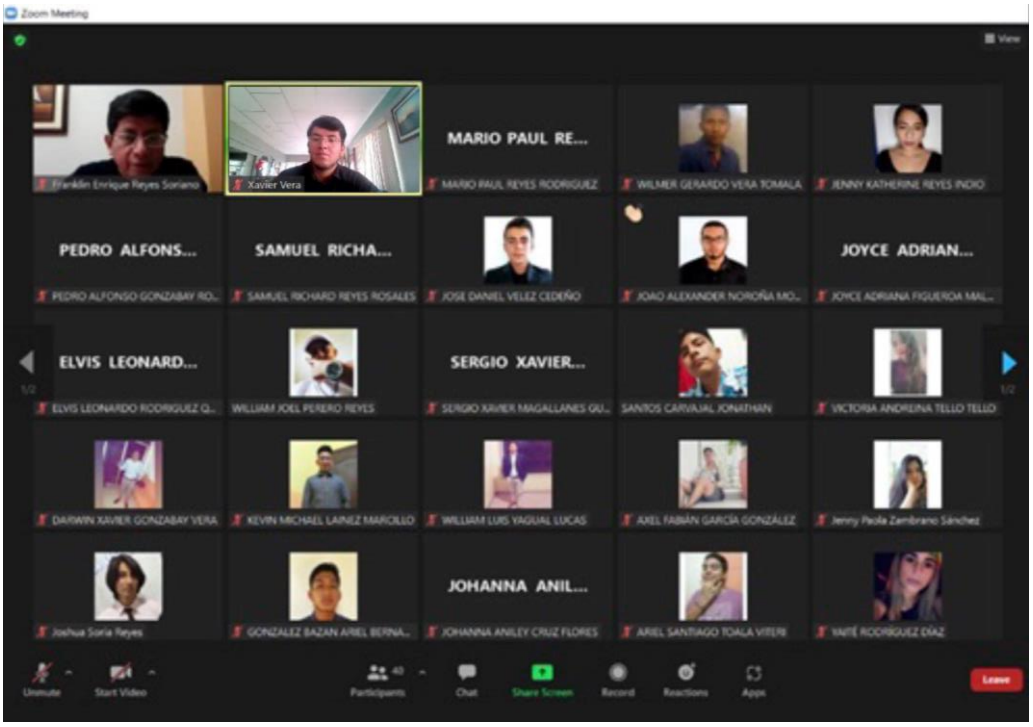
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

10. Does the use of a methodological guide containing technical vocabulary in English and basic grammar help to students understand technical readings in English?

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Thanks for your time and cooperation!

APPENDIX #4: PHOTOS



APPENDIX #5: THE PROPOSAL

METHODOLOGICAL GUIDE

TECHNICAL ENGLISH

INDUSTRIAL MECHANICS

AUTHOR: FRANCISCO XAVIER VERA LÓPEZ

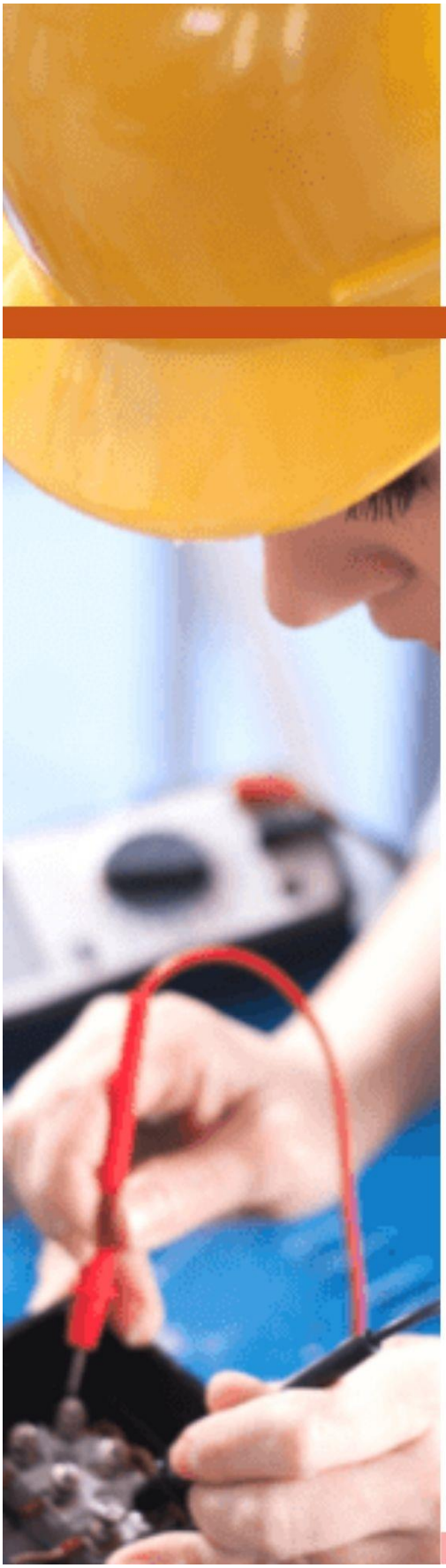
IM

INTRODUCTION

This work is based on the Communicative Approach applied to Industrial Mechanics; it is important to understand that students must communicate using language in an appropriate way according to the social context. Students need to know technical language, its meaning and functions as well as procedures, tools and machinery.

Students must try to understand by themselves when specific vocabulary is appropriate. The teacher's role is less dominant in this method than other methods. Students are more responsible for their own knowledge. Another important aspect of this didactic material is that students can learn about vocabulary that is used only for native speakers in specific areas.

Finally, all activities will help you to understanding readings, texts, manuals and technical documents in English used in industrial mechanics. It specify allows students to maximize their skills, specially improving the skills of reception.



INDEX

TECHNICAL ENGLISH
INDUSTRIAL MECHANICS

U-1

MEETING PEOPLE WORKING IN A WORKSHOP

To identify people who work in a workshop by using simple present and their profession.

FUNCTION

VOCABULARY: Professions
GRAMMAR: simple present (verb to be)
READING
USEFULL EXPRESSIONS
GRAMMAR: Simple present (other verbs)

STRATEGY

Listening
Labeling
Completing Answering
Reading
True or false
Rewriting sentences
Writing

U-2

DO YOU HAVE ANY TOOL?

To learn the name of tools, their uses, and how to use ANY and SOME

FUNCTION

LISTENING
VOCABULARY: Tools.
READING: The use of some tools.
GRAMMAR: Countable nouns

STRATEGY

Categorizing
Listen and write
Matching
Writing sentences
Joining words
Completing

U-3

ARE THERE ANY WORKSHOP HERE?

To use there is / there are and the names of some tool in a workshop

FUNCTION

READING
USEFULL EXPRESSIONS
VOCABULARY: Names of some tools in a workshop
GRAMMAR: There is / there are Some / any

STRATEGY

Silent reading
Question and answer
Repetition
Association
Matching
Write sentences

U-4

AREAS

To recognize the names of materials and parts made in a workshop and use correctly the gerund form after some verbs.

FUNCTION

VOCABULARY: Materials and parts made in a workshop.
GRAMMAR: Adverbs of frequency
Gerund after verbs

STRATEGY

Choosing
Labeling
Write sentences
Completing sentences
Writing sentences
Question and answer

U-5

INDUSTRIAL MECHANICS

To identify the purpose of industrial mechanics

FUNCTION

READING:
MACHINE CYCLE.
INDUSTRIAL ENGINEERING FOCUS AREAS.
TOOLS & TECHNIQUES OF INDUSTRIAL ENGINEERING USED IN APPAREL INDUSTRY.

STRATEGY

Scanning
Completion
Inference
True or false
Write sentences

1

MEETING PEOPLE WORKING IN A WORSHOP

OBJECTIVE: To identify people who work in a workshop by using of simple present and professions.

VOCABULARY

1. – Listen carefully to the professor and repeat with the correct pronunciation. (6 minutes)

(a) Manager

(b) Secretary

(c)Lathe operator

(d) Receptionist

(e)Engineer

(f) Warehouse manager

(g) Welder

(h) Security Guard

2. - Label the picture with the correct occupations in part number 1. (6 minutes)

a)_____

b)_____

c)_____

d)_____

e)_____

f)_____

g)_____

h)_____

GRAMMAR THE VERB TO BE AND INFORMATION QUESTIONS

AFFIRMATIVE STATEMENTS		
NOUN + VERB TO BE + COMPLEMENT		
I	AM	THE WELDER
HE	IS	THE RECEPTIONIST
THEY	ARE	MANAGERS

NEGATIVE STATEMENTS		
NOUN + VERB TO BE (-) + COMPLEMENT		
I	AM	THE WELDER
HE	IS	THE RECEPTIONIST
THEY	ARE	MANAGERS

YES/NO QUESTIONS		
VERB TO BE + NOUN + COMPLEMENT + ?		
ARE	YOU	THE WELDER?
IS	HE	THE RECEPTIONIST?
ARE	THEY	MANAGERS?

SHORT ANSWER	
AFFIRMATIVE	NEGATIVE
YES, I AM.	NO, I AM NOT.
YES, HE IS.	NO, HE IS NOT.
YES, THEY ARE.	NO, THEY ARE NOT.

INFORMATIVE QUESTIONS			
WH QUESTION + VERB TO BE +	NOUN	+	COMPLEMENT + ?
WHERE	ARE	YOU	GOING
WHO	IS	THE RECEPTIONIST?	
WHEN	ARE	THE MEETINGS?	

INFORMATIVE QUESTIONS' ANSWER	
SHORT	LONG.
TO THE OFFICE	HE IS GOGIN TO THE OFFICE.
ADAM SLIDER	HE IS ADAM SLIDER.
FROM 11AM TO 2PM.	THEY ARE FROM 11AM TO 2PM.

3. Complete the following statements using the correct form of the "verb to be" according to the symbol in brackets: Positive (+) Negative (-). (8 minutes)

a) She ……a lathe operator. (-)

b) They……the security guards. (+)

c) We……the secretaries. (-)

d) I……the receptionist. (+)

e) You……a manager. (-)

f) He……an engineer. (+)

4. Answer the following questions with the correct form of "verb to be". (7 minutes)

a) Is Demi Lovato a warehouse manager?

Yes, …… No, ……

b) Is any filtration in the mechanic industry?

Yes, …… No, ……

c) Is the oleohidraulic ready?

Yes, …… No, ……

d) Is the level sensor in the industry market?

Yes, …… No, ……

e) Are you using the bolts right now?

Yes, …… No, ……

5. **Pay attention to the following conversation and read it while you listen.** (10 minutes)

Harry: Good morning, Miss Dua, what are you looking up today, how can I help you?

Dua: Oh! Good morning Mr. Harry. I am looking for a digital voltmeter. I have to diagnose my machine because I need to understand what is happening with it.

Harry: Sounds very interesting. Let me see at the back if I have it, new merchandise has arrived.

Dua: I´ll be here.

Harry: Here you go. This one´s completely new. Would you like to buy it?

Dua: Yes, please. I will take it.

Harry: Certainly. How would you like to pay for it?

Dua: Charge please.

6. Read the sentences below and write (T) true or (F) false according with the conversation above. (6 minutes)

	T	F
-Dua is looking for an electromagnetic flowmeter.		
- Harry is in an industrial mark place.		
-Dua left the place.		
-Harry did not find the instrument.		
-Dua does not need anything else.		

GRAMMAR THE SIMPLE PRESENT TENSE WITH OTHER VERBS

THE SIMPLE PRESENT WITH OTHER VERBS	
AFFIRMATIVE SENTENCES	NEGATIVE SENTENCES
He has a radial play.	He does not have a radial play.
They do hydronic circuits for the machine.	They do not do hydronic circuits for the machine.

YES/NO QUESTIONS	AFFIRMATIVE ANSWER	NEGATIVE ANSWER
Do you want to help me?	Yes, I do	No, I do not.
INFORMATION QUESTION	SHORT ANSWER	LONG ANSWER
What else do you need?	Nothing.	I do not need anything else.

8. - Rewrite the following sentences according with the parentheses. (7 minutes)

a) You have something to do with the alternator. (Information question) ……..?

b) He wants to be a welder. (Negative sentence) ……..?

c) Saul works PetroEcuador. (Information question) ……..?

d) Raul doesn't work as a warehouse manager. (Affirmative) ……?

e) Daniela calls to the receptionist. (Negative) ……?

9. – Remember the grammar learned and write the sentences correctly using the information given.

(10 minutes)

a) Armando / work / in the transformation matrix? …….?

b) Sergio / weld / the aluminum door……

c) You / go (not) / to the company. …….

d) The security guard / work / in the flat? ……?

e) The welder / start / the job at 5pm…….

f) She/ finish (not) / the plan. .....

g) Who / the warehouse? ……..?

2

DO YOU HAVE ANY TOOL?

OBJECTIVE: To learn the name of the tools, their uses and how to use any and some.

LISTENING

1. – Listen carefully to the professor and repeat with the correct pronunciation. (10 minutes)

DRILL

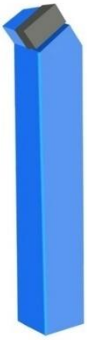
SCREWDRIVER

VISE CLAMP

DRILL BITS

TAPE MEASURE

CALIPER



BRAZED TOOL

PL IERS

MILLING CUTTER

WRENCH

SAFETY GLASSES

ANGLE GRINDER

TOOLBOX

CUTTING DISC

CARBIDE BURS

WELDIND ELECTRODE

2. Make a list of each category using the vocabulary of the tools. (5 minutes)

TO CUT	TO DRILL	TO MEASURE	OTHER

3. Listen carefully to your professor and write the words you hear. (6 minutes)

a) ……. d)……. g) …….

b) ……. e) ……. h) …….

c)……. f) …….. i) ……..

READING

4.-Match the word with the correct meaning. (6 minutes)

UNION

SCAFFOLD

CIRCUIT

POLARITY

a. A temporary or movable platform and structure for workers to stand on when working at a height above the floor.

b. The positive (+) or negative (-) state of an object.

c. A closed path through which hydraulic fluid flows

d. A fitting used to connect or disconnect two tubes that cannot

5. - Match the name of the tool with its correct definition. (6 minutes)

TAPE MEASURE	SCREWDRIVER	PLIER	CALIPER

a) ……. A hand tool for tightening or loosening a screw.

b) ……. An instrument for measuring thicknesses and diameters, usually made up of adjustable legs.

c) ……. A long, flexible strip marked with divisions of the foot or meter and used for measuring. Also called tapa-line.

d) …….. Small pincers with long jaws, for bending wire, holding small objects.

GRAMMAR

COUNTABLE NOUNS

SINGULAR	PLURAL
a toolbox	many toolboxes
a tape measure	several tape measures
an oxy acetylene welding	two oxy acetylene welding
a drill	five drills

6. Based on the chart of the grammar section, use the countable nouns to identify the tools. (6 minutes)

……. 

……. 

……. 

……. 

……

……. 

……. 

……. 

……. 

……

3 ARE THERE ANY WORKSHOPS HERE?

OBJECTIVE: To use there is / there are and the names of some tool in a workshop.

READING

1. Look at the chart, check the previous vocabulary and fill in the gap with the correct word. After the activity, listen to your professor, read it carefully and check the responses. (10 minutes)

aluminum rounds - welding - warehouse - enough - alright - by the way

Taylor: Andrew, I need some…….. Bring them please.

Andrew: Why me? I am …….. the cap.

Taylor: Because you are in charge of the…….

Andrew: Ok……., when I finish with this, I'll go.

Taylor: Oh no! I don't have …… time.

Andrew: …… I'll go right now.

Taylor: Wait a second.

Andrew: What happened?

Taylor: I´ll go with you.

Andrew: Ok. Let's go

USEFUL EXPRESSIONS

Listen and repeat (5 minutes)

Why me?	Oh no!	Wait a second.
By the way	What happened?	Let's go.

VOCABULARY

2. Match the picture with the correct root word. (6 minutes)

a. VISE GRIP

b. BUSHING

c. DRILL PRESS

d. HACK SAW

e. CLAMPS

GRAMMAR THERE IS / THERE ARE (SOME AND ANY)

THERE IS / THERE ARE (SOME AND ANY)	
AFFIRMATIVE STATEMENT	NEGATIVE STATEMENT
There are some vise grips.	There are not any vise grips.
There is some hack saw.	There is not any hack saw.
There is some acrylic plastic here.	There is not any acrylic plastic here.
There is some hack saw.	There is not any hack saw.

3. Write five sentences using the previous grammar.

1.....

2.....

3.....

4.....

5.....

4 MATERIALS AND PARTS OF A WORKSHOP

OBJECTIVE: To recognize the names of materials and parts made in a workshop and use correctly the gerund form after some verbs.

VOCABULARY

1. Choose and write the word in the correct box. (10 minutes)

STEEL ACRYLIC PLASTIC ALUMINUM BRASS ROUND COLD ROLLED

IRON METAL STAINLESS STEEL ALUMINUM ROUND DRILL ROD STEEL(12L14)

PTFE TEFLON ROD DELRIN PLASTIC

COMMON METALS	COMMON PLASTICS

GRAMMAR

GERUNDS AFTER VERBS

GERUNDS AFTER VERBS			
LIKE – LOVE – HATE – DO NOT MIND - PREFER	YES / NO QUESTIONS	SHORT ANSWER	INFORMATION QUESTION
He like working with the hack saw.	Does he like working with the hack saw?	Yes, he does. No, he does not.	Wh Question + do/does + (like, love, hate, do not mind, prefer) + verb ing + complement + ?.
They love doing some aluminum rounds	Do they love doing any aluminum rounds?	Yes, they do. No, they do not.	
She hate fixing the machine.	Does she hate fixing the machine?	Yes, she does. No, she does not.	
You do not mind cleaning the iron metal.	Do you mind cleaning the iron metal?	Yes, I do. No, I do not.	
We prefer buying the drill rod.	Do we prefer buying the drill rod?	Yes, we do. No, we do not.	

2. Write sentences using the previous char grammar of gerunds after verbs. (8 minutes)

a)……

b)……

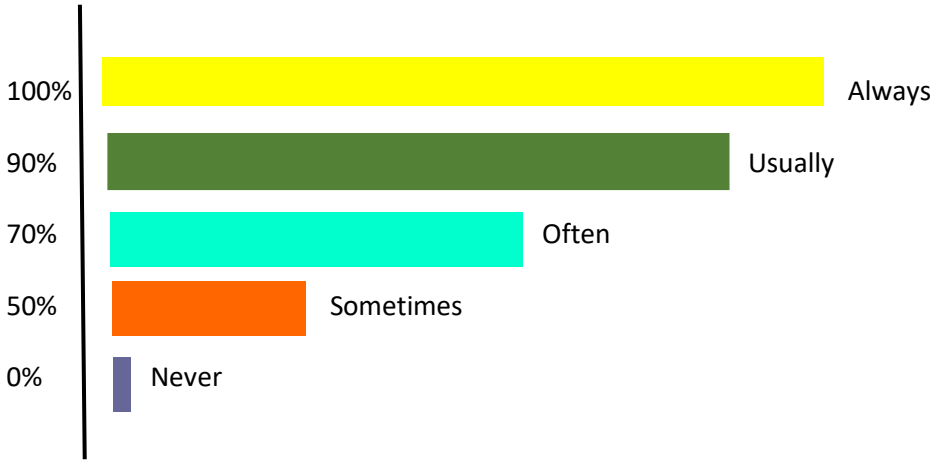
c)……

d)……

e)……

GRAMMAR

ADVERBS OF FREQUENCY



Adverbs of Frequency are keywords for Present Simple. They are placed before the **main** verb.

(EXCEPTION: verb "be"):

I always have a acrylic plastic in my toolbox.

I usually forget my wrench.

I never return to my office late.

BUT: *I **am** never return to my office late.*

*She **is** often return to my office late.*

*They **are** sometimes return to my office late.*

USEFUL EXPRESSIONS

Every Monday/week/month etc.

On Tuesdays/ Sundays etc.

In the morning/afternoon/ summer etc.

At Christmas/ Easter etc.

3. Write five sentences using the adverbs of frequency. (Always, usually, often, sometimes, and never)

(6 minutes)

1……

2……

3……

4……

5……

6. - Write the focus areas you like and don't like in Industrial Engineering. (6 minutes)

a) .....

b) .....

c) .....

d) .....

e) .....

f) .....

7.- Answer the following questions. (5 minutes)

a) Do you like studying you major?

.....

b) Why do you prefer working with Industrial Mechanics?

.....

c) Do you love online classes?

.....

d) Do you hate something in special?

.....

5 INDUSTRIAL MECHANICS

OBJECTIVE: To recognize the process of each machine.

READING

1. Read the following text and order with a letter the following paragraphs to have the correct reading. (10 minutes)

MACHINE CYCLE

_____1. A machine cycle consists of the steps that a computer's processor executes whenever it receives a machine language instruction. It is the most basic CPU operation, and modern CPUs are able to perform millions of machine cycles per second.

_____2. The machine cycle is the most basic operation that a computer performs, and in order to complete menial tasks such as showing a single character on the screen, the CPU has to perform multiple cycles. The computer does this from the moment it boots up until it shuts down.

_____3. The steps of a machine cycle are: fetch, decode, execute.

_____4. The cycle consists of three standard steps: fetch, decode and execute. In some cases, store is also incorporated into the cycle.

https://www.techopedia.com/definition/8180/machine-cycle

2. - Circle the correct answer. (6 minutes)

In paragraph number 1, the word "**machine**" refers to:

a) A piece of equipment.

b) Particular type of work.

c) A shape of metal.

In paragraph number 4, the word "**fetch**" refers to:

a) A place

b) To sold a particular piece

c) A collection

3. Mark with a check the correct answer for the True or False statements. (6 minutes)

	T	F
The steps of a tool cycle are fetch, decode, execute.		
A machine cycle consists of the steps that a computer's processor.		
It is the most basic CPU operation.		

4. Write the name in each paragraph. (10 minutes)

INDUSTRIAL ENGINEERING FOCUS AREAS

Supply Chain and Logistics Industrial automotive engineering Manufacturing Systems

a)…….

1. It focuses on the tasks and concepts in the automotive industry from manufacturers and suppliers to service providers for both engineering and business decision-making. It includes development and introduction of new technologies, state-of-the-art manufacturing concepts, internationalization of value-added chains, and increased product variety.

b)…….

2. It can help to understand the global relationships that exist among manufacturers, suppliers, engineers, researchers, marketers, and managers and govern the modern manufacturing process. Systems engineering and integrated design approaches are used to achieve manufacturing excellence.

c)…….

3. In order to gain a global competitive advantage, companies are looking to develop effective supply chain and logistics strategies. A supply chain focus provides a foundation in supply chain and logistics systems with a national and global perspective.

https://www.ltu.edu/engineering/industrial/focusarea.asp

In paragraph 1, the word "**business**" is closest in meaning to:

a) company

b) flat

c) tool

What does the paragraph 3 suggest about automotive industry?

a) It includes development and introduction of new technologies.

b) A foundation in supply chain and logistics systems

c) A group of companies who are looking to develop effective supply chain.

5. Write the correct number to add a new sentence in order to follow the reading in each paragraph.

(10 minutes)

TOOLS & TECHNIQUES OF INDUSTRIAL ENGINEERING USED IN APPAREL INDUSTRY

Industrial Engineering (IE) is concerned with the design, Improvement, and installation of integrated system of men, material, and machines for the benefit of mankind. a)……. Now industrial engineering is an integral part of garment manufacturing. It is treated one of the important element in the apparel industry to improve productivity and secure requested delivery date. b)……

The main aim of tools are to improve the productivity of the organization by optimum utilization of organizations resources: men, materials, and machines. c)…….

Planning and designing manufacturing processes and equipment is a main aspect of being an industrial technologist. An Industrial Engineer is often responsible for implementing certain designs and processes. Industrial Technology involves the management, operation, and maintenance of complex operation systems.

https://textilelearner.net/tools-techniques-of-industrial-engineering/

1. It draws upon specialized knowledge and skills in the mathematical and physical sciences together with the principles and methods of engineering analysis and design to specify, predict and evaluate the results to be obtained from such systems.

2. By applying IE tools and techniques, engineers can enhance the production floor performance.

3. The major tools used in industrial engineering are: inventory control, job evaluation, facilitates planning and material handling, system analysis and linear programming, simulation.

EVALUATION

1. **What is the meaning of the following words?** (10 minutes)

Ball Bearing:

_____

_____

_____

Idler Gear:

_____

_____

_____

Corrosion:

_____

_____

_____

Spur Gear:

_____

_____

_____

Steel Alloy:

_____

_____

_____

2. **Match the correct meaning with the word.** (5 minutes)

a. A fabric mounted in a frame for removing particulate material from a flow	GAP LATHE
b. An instrument for measuring the rotation speed of a shaft, wheel, disc, etc.	FABRIC FILTER
c. A lathe having a gap in the bed at the headstock end, allowing larger-diameter workpieces to be accommodated.	RADIAL-FLOW TURBINE
d. A turbine, such as the Francis hydraulic turbine, in which the working fluid enters the machine through a volute be turned.	TACHOMETER

3. **Choose the correct option for each statement.** (10 minutes)

An emergency-equipment company makes warning-signal flares. The company wants to redesign a flare so that it produces light for a longer period. After the company thinks of ideas, what is the next step in the design process?

a. Build a prototype
b. Define the problem
c. Decide on the best solution

A group of engineers designed and constructed a flying car prototype. Their goal is for the car to enable people to safely fly to and from work instead of getting stuck in traffic jams. How will the engineers determine that this prototype meets their design requirements?

a. Have a test pilot attempt to fly it from one location to another.
b. See if the car can hover one meter above the ground for 20 minutes.
c. Drive in the car at highway speeds on an interstate roadway at nighttime.

Industrial Engineers plan on developing a new drill for use on oil rigs. What should the engineers do first in order to develop the new drill?

a. Conduct research on features for a new drill
b. Determine the materials needed to build the new drill
c. Build a prototype of the new drill

Technicians plan to develop a new type of keyboard that will have alphabet letters in different positions from a standard keyboard. Which will best help the technicians decide if the new keyboard is an improvement over the standard one?

a. analyzing the problems that people have using standard keyboards
b. asking people their opinions of how they like standard keyboards
c. comparing the speeds at which people type on each style of keyboard

A factory is producing a new machine designed to reduce the amount of air pollution in houses. The machine was produced and sold to the public. After several months, reports show the machine is not working correctly. Which of these most likely caused this outcome?

a. The proper cost analysis was not performed.
b. The manufacturing of the machine was done over several months
c. The prototype was not tested before use by the public

4. **Write two paragraphs (6 – 10 lines each paragraph) about your future as Industrial Engineering using all the grammar section learned.** (20 minutes)

_____

_____

_____

_____

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_____

5. **To test your speaking ability, read the following reading and you will be evaluated based on the following rubric.** (5 minutes)

HISTORY OF INDUSTRIAL ENGINEERING AT UOFL SPEED SCHOOL

To fully understand the nature of industrial engineering (IE) as a profession, it is important to review its historical development. It has been suggested that perhaps Leonardo da Vinci was the first Industrial Engineer, because there is evidence that he applied science to the analysis of human work, by examining rate at which a man could shovel dirt around the year 1500. Others state that the IE profession grew from Charles Babbage's study of factory operations and specifically his work on the manufacture of straight pins in 1832 . However, it has been generally argued that these early efforts, while valuable, were merely observational and did not attempt to engineer the jobs studied or increase overall output.

Most analysts agree that the IE profession grew out of application of science to the design of work and production systems that started in the 1880's. The pioneers who led that effort were Frederick W. Taylor (shown at right, the so-called "Father of Scientific Management") who initiated the field of work measurement, Frank Gilbreth and his wife, Lillian Gilbreth (immortalized in the 1948 book and 1950 movie Cheaper by the Dozen), who perfected methods improvement, and Henry Gantt who pioneered the field of project management. The term "Industrial Engineering" can be traced to James Gunn, in The Engineering Magazine in 1901 when he suggested that a profession and curriculum of IE be established and organized similarly to that of electrical and mechanical engineering.

The first course in Industrial Engineering can be traced to one called Factory Economics offered in the Mechanical Engineering department at the University of Kansas in the 1901-02 term. The first formal IE degree program was established in 1908-09 by Hugo Deimer at Penn State University as a modified version of the mechanical engineering curriculum.

The American Institute of Industrial Engineers, now known as the Institute of Industrial and Systems Engineers (IISE), was founded in 1948. Today there are over 100 IE degree programs in the US alone.

Speed Scientific School was established in September 1924 as a result of an endowment from the James Breckenridge Speed Foundation. It is now known as the J.B. Speed School of Engineering at the University of Louisville . There were initial programs that led to the Bachelor of Science in four designated branches of engineering: chemical, civil, electrical, and mechanical. There is an almost unbroken trail of industrial engineering courses from the mechanical engineering program of the 1920's to the industrial engineering program of today. ME 26, mechanical handling of materials, was introduced in the 1926 bulletin and was a required course in the curriculum. ME 24, Industrial Engineering, became a requirement in the 1927 bulletin. Engineering 432, Principles of Engineering Economy, (now IE 370) became a senior year requirement for all four engineering programs in 1939. After a short absence during the 1940's the industrial engineering course re-appeared as ME 462-Industrial Management in 1943. This was replaced by ME 534- Industrial Operations Analyses, in 1960.

In 1968, the course was relabeled as ME 434, and other graduate courses were introduced including ME 681-Operations Management and Capacity Decision Systems, ME 682-Product Planning and Work Systems Design, ME 683-Operations Planning and Control, ME 684-Advanced Topics in Operations Research, and ME 685-Advanced Industrial Dynamics. These were eventually dropped in 1970 and replaced by counterparts when the five-year Master of Engineering in Engineering Management degree was announced in the 1971 catalog. This new interdisciplinary program required a four-unit program of study with 23 units of program electives.

Each year after, the program gained structure. By 1973 there were 16 units of required coursework and 24 by 1975. The program became Engineering Management/Industrial Engineering in the 1976 catalog. A Department of EM/IE was established and the MEng with specialization in IE degree

was approved in 1977. The Department of Industrial Engineering was officially named in 1981. By August 1982 nine MEngIE degrees had been awarded. In 1987 the IE Department received approval to establish a PhD in IE. Today, the department offers five degree programs, BSIE, MEngIE, MSIE, PhD, and MEngEM, and graduates approximately 100 students per year.

https://engineering.louisville.edu/academics/departments/industrial/history-of-ie/

	0	1	2
Pronunciation and Intonation	Students do not seem prepared.	Students have some pronunciation and intonation mistakes.	Students demonstrate a correct pronunciation and a good intonation.
Enthusiasm	Very little use of facial expressions or body language.	Facial expressions or body language sometimes generate enthusiasm about the topic.	Facial expressions or body language generate a strong enthusiasm for the topic.
Eye contact	No eye contacts.	Good use of eye contact.	Excellent use of eye contact.
Fluency	Slow rhythm	Neutral rhythm	Good rhythm

APPENDIX #6: CURRICULUM

UNIVERSIDAD ESTATAL PENÍNSULA DE SANTA ELENA
FACULTAD DE CIENCIAS DE LA INGENIERIA
REDISEÑO CARRERA DE INGENIERIA INDUSTRIAL
MALLA CURRICULAR, MODALIDAD: PRESENCIAL, LUGAR DE EJECUCIÓN: SEDE MATRIZ LA LIBERTAD

FECHA APROBACIÓN OCAS: 07/10/2019 RIGE A PARTIR: 2019-2

						ACD	APE	AA	TH	CR
I	FISICA BASICA (ACD 64, APE 32, AA 96, CR 4, TH 192)	QUIMICA I (ACD 48, APE 48, AA 48, CR 3, TH 144)	CALCULO DIFERENCIAL E INTEGRAL (ACD 64, APE 0, AA 128, CR 4, TH 192)	REDACCION CIENTIFICA (ACD 32, APE 0, AA 64, CR 2, TH 96)	TICS APLICADA A LA INGENIERIA (ACD 32, APE 0, AA 64, CR 2, TH 96)	240	80	400	720	15
II	FISICA APLICADA (ACD 64, APE 32, AA 96, CR 4, TH 192)	QUIMICA II (ACD 48, APE 32, AA 64, CR 3, TH 144)	CALCULO DE VARIAS VARIABLES (ACD 64, APE 0, AA 128, CR 4, TH 192)	METODOLOGIA DE LA INVESTIGACION (ACD 32, APE 0, AA 64, CR 2, TH 96)	DISEÑO ASISTIDO POR COMPUTADORA (ACD 32, APE 16, AA 48, CR 2, TH 96)	240	80	400	720	15
III	ESTATICA (ACD 64, APE 32, AA 96, CR 4, TH 192)	TERMODINAMICA (ACD 64, APE 32, AA 96, CR 4, TH 192)	ECUACIONES DIFERENCIALES (ACD 48, APE 0, AA 96, CR 3, TH 144)	CONTABILIDAD GENERAL (ACD 32, APE 16, AA 48, CR 2, TH 96)	MAQUINAS Y HERRAMIENTAS (ACD 32, APE 0, AA 64, CR 2, TH 96)	240	80	400	720	15
IV	DINAMICA (ACD 48, APE 48, AA 48, CR 3, TH 144)	MECANICA DE MATERIALES (CRE. CR 3.00, TH 96; ACD 48, APE 0, AA 96, CR 3, TH 144)	ESTADISTICA PARA INGENIEROS (ACD 48, APE 0, AA 96, CR 3, TH 144)	INVESTIGACION DE OPERACIONES I (ACD 48, APE 32, AA 64, CR 3, TH 144)	SEGURIDAD INDUSTRIAL Y SALUD OCUPACIONAL (ACD 48, APE 32, AA 64, CR 3, TH 144)	240	112	368	720	15
V	ELECTRICIDAD INDUSTRIAL (ACD 48, APE 48, AA 48, CR 3, TH 144)	METODOS NUMERICOS (ACD 48, APE 32, AA 64, CR 3, TH 144)	INGENIERIA DE PROCESOS I (PPL. CR 3.00, TH 96; ACD 48, APE 0, AA 96, CR 3, TH 144)	INVESTIGACION DE OPERACIONES II (ACD 48, APE 0, AA 96, CR 3, TH 144)	CONTABILIDAD DE COSTOS (ACD 48, APE 0, AA 96, CR 3, TH 144)	240	80	400	720	15
VI	INGENIERIA DE METODOS (ACD 48, APE 0, AA 96, CR 3, TH 144)	OPERACIONES INDUSTRIALES (ACD 48, APE 32, AA 64, CR 3, TH 144)	INGENIERIA DE PROCESOS II (ACD 48, APE 0, AA 96, CR 3, TH 144)	SIMULACION Y DISEÑO DE EXPERIMENTOS (PPL. CR 3.00, TH 144; ACD 48, APE 48, AA 48, CR 3, TH 144)	INGENIERIA ECONOMICA (ACD 48, APE 0, AA 96, CR 3, TH 144)	240	80	400	720	15
VII	AUTOMATIZACION Y SISTEMAS FLEXIBLES DE MANUFACTURA (ACD 48, APE 48, AA 48, CR 3, TH 144)	INGENIERIA AMBIENTAL Y SISTEMAS ENERGETICOS (ACD 48, APE 0, AA 96, CR 3, TH 144)	CONTROL DE CALIDAD (ACD 48, APE 0, AA 96, CR 3, TH 144)	GESTION DE PROYECTOS (ACD 48, APE 32, AA 64, CR 3, TH 144)	CADENA DE ABASTECIMIENTO Y LOGISTICA (ACD 48, APE 0, AA 96, CR 3, TH 144)	240	80	400	720	15
VIII	DISEÑO Y ORGANIZACION DE PLANTAS INDUSTRIALES (ACD 48, APE 32, AA 64, CR 3, TH 144)	INGENIERIA DE LA PRODUCCION (ACD 48, APE 0, AA 96, CR 3, TH 144)	GESTION DE LA CALIDAD TOTAL (ACD 48, APE 0, AA 96, CR 3, TH 144)	INTEGRACION CURRICULAR (ACD 48, APE 48, AA 48, CR 3, TH 144)	ESTRATEGIA COMPETITIVA (ACD 48, APE 0, AA 96, CR 3, TH 144)	240	80	400	720	15
REQUISITO	B1 INGLES (CR 8, TH 384)									

IT#: ASIGNATURA
ACD H APE H AA H
CR H TH H

TH TOTAL HORAS
ACD APRENDIZAJE EN CONTACTO CON EL DOCENTE
APE APRENDIZAJE PRÁCTICO EXPERIMENTAL
AA APRENDIZAJE AUTÓNOMAS
CR CRÉDITOS
PPL PRÁCTICAS PRE PROFESIONALES LABORALES
PSC PRÁCTICAS DE SERVICIOS COMUNITARIOS

UNIDAD BÁSICA
UNIDAD PROFESIONAL
UNIDAD DE INTEGRACIÓN CURRICULAR

RESUMEN DE HORAS MALLA CURRICULAR

TOTAL DE ASIGNATURAS	40
HORAS APRENDIZAJE EN CONTACTO CON EL DOCENTE	1,600
HORAS APRENDIZAJE PRÁCTICO EXPERIMENTAL	672
HORAS APRENDIZAJE AUTÓNOMAS	3,168
HORAS PRÁCTICAS PRE PROFESIONALES LABORALES	240
HORAS PRÁCTICAS DE SERVICIOS COMUNITARIOS	96
TOTAL DE HORAS	5,696
TOTAL DE CRÉDITOS	357

ITINERARIO

OBSERVACIÓN: ESTA MALLA CURRICULAR, FUE MODIFICADA BAJO LA DISPOSICIÓN TRANSITORIA TERCERA DEL REGLAMENTO DEL RÉGIMEN ACADÉMICO DEL 21 DE MARZO DE 2019.

APPENDIX #7: URKUND

Certificado Sistema Anti Plagio

En calidad de tutora del Trabajo de Integración Curricular denominado **"TECHNICAL ENGLISH AND ITS DEVELOPMENT IN READING SKILLS FOR STUDENTS OF INDUSTRIAL ENGINEERING MAJOR IN THE AREA OF INDUSTRIAL MECHANICS AT "UNIVERSIDAD ESTATAL PENÍNSULA DE SANTA ELENA". LA LIBERTAD. PROVINCE OF SANTA ELENA. ACADEMIC PERIOD 2021-1."** elaborado por la estudiante **Francisco Xavier Vera López,** de la Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros, de la Facultad de Ciencias de la Educación e Idiomas, de la Universidad Estatal Península de Santa Elena, me permito declarar que una vez analizado en el sistema anti plagio URKUND, luego de haber cumplido los requerimientos exigidos de valoración, el presente trabajo de investigación, se encuentra con **4%** de la valoración permitida, por consiguiente se procede a emitir el informe.

Atentamente,

Msc. Verónica Vera Vera.
C.I. 0919712257
DOCENTE TUTOR

Adjunto reporte de similitud:

Curiginal

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