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## Analysis of impulse buying and its relationship with psychological variables in a sample of population from the South of the State of Sonora

## Análisis de las compras impulsivas y su relación con variables psicológicas en una muestra de habitantes del Sur del estado de Sonora

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### Abstract

The purpose of this proposal is to analyze the behavior towards impulse purchases and its relationship with psychological variables in a sample of the inhabitants of the city of Navojoa, Sonora, this study was born from the historical analysis of consumption, an analysis was carried out to contrast the hypotheses proposed, in addition the most significant correlations were sought and an analysis was made through the Statistical Package for Social Sciences (SPSS) program. This in order to identify the factors that affect the impulses towards purchase, its influence with gender, in order to identify with the support of the literature the psychological causes that could affect consumer behavior. The results indicate that self-esteem is significantly linked to impulse purchases, a low level of self-esteem implies making impulsive purchases more frequently, in this sense there are no significant differences by age or gender.

### Impulse Buying, Self-Esteem, Materialism

### Resumen

La presente propuesta tiene por objeto analizar el comportamiento hacia las compras impulsivas y su relación con variables psicológicas en una muestra de los habitantes de la ciudad de Navojoa, Sonora, este estudio nace del análisis histórico del consumo, se llevó a cabo un análisis para contrastar las hipótesis planteadas, además se buscaron las correlaciones más significativas y se hizo un análisis a través del programa Statistical Package for Social Sciences (SPSS). Esto con el fin de identificar los factores que inciden en los impulsos hacia la compra, su influencia con el género, para de esta forma identificar con el apoyo de la literatura las causas psicológicas que pudieran afectar el comportamiento del consumidor. Los resultados apuntan que la autoestima está ligada significativamente a las compras impulsivas, un nivel bajo de autoestima conlleva a realizar compras impulsivas con mayor frecuencia, en este sentido no existen diferencias significativas por su edad o sexo.

### Compras Impulsivas, Autoestima, Materialismo

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## Introduction

Studies of impulse buying are necessarily based on the historical analysis of consumption. That said, the economic-social strategies adopted by various countries in response to this fact have led to a great deal of research into the different manifestations that consumers assume in the face of the phenomenon of consumption.

Veblen's classic model of economics (1899/1979) provides a historical background on purchasing. This model explains the purchase phenomenon based on the Price - Demand relationship, i.e., a decrease in price leads to higher demand. However, there are cases in which there is no such direct relationship, such as, for example, the theory of Conspicuous Consumption. This theory states that there are situations in which consumers are attracted to expensive products in order to show and demonstrate their wealth. Therefore, there will be a direct relationship between wealth and conspicuous consumption (Luna, 1998).

This urge to buy can lead to serious problems and become a real nightmare when it becomes addictive and causes indebtedness. Compulsive purchases, also called abnormal acquisition disorder, lead to the acquisition of unnecessary things, with severe economic repercussions, serious family/labor crises or legal problems that can cause difficult situations. The compulsive action is directly related to self-esteem, as it tends to improve the mood, but this mood will be temporary, it is interesting to understand that these are situations that are fixed from within people, hence it is considered a disorder. Although the cost of compulsive shopping disorder has never been calculated, it is estimated that impulse buying manages more than \$4 billion in annual purchases in North America (Kacen & Lee, 2002).

Since the middle of the last century, interest in impulse buying behavior began to emerge. Early work focused primarily on decision making in a purchase context and how the environment stimulated unplanned purchases (Sarabia Sanchez & Schmidt, 2004). One of the first authors to address impulsivity in purchasing was Rook (1987), who defined it as a strong feeling of irresistible urgency, without conscious planning. This impulsivity is difficult to resist and control, as it allows the experience of anticipated pleasure.

Subsequently, Rook and Fisher (1995) suggest that impulsive behavior can be associated both with negative behavior (primitive, immaturity and even stupidity), leading to negative consequences in the financial field and also in personal aspects, being associated with low self-esteem; as well as with situations in which impulsivity is seen as neutral or in a favorable way according to the point of view of the social norm, for example, deciding to buy something impulsively for a two-for-one offer or buying a gift on impulse because a friend is ill. In an era of consumerism, it is of interest to study impulse buying, taking into account that stimuli from the immediate context can be conducive to impulse buying. From market sectors, understanding such a phenomenon favors the promotion of impulse buying. In an era of consumption, it is of interest to study impulse buying, taking into account that the stimuli of the immediate context can be conducive to impulse buying. In this regard, Rook (1987) pointed out that most shoppers had strong impulse buying tendencies, influenced by innovations in the market, credit cards, store sales, store opening hours, among others.

The analysis of impulse buying is becoming increasingly important today due to the following factors (Sánchez, F. J. S. *et al.*, 2004):

The rise of emotional communication: there is an increasing tendency on the part of companies to carry out a type of communication that can move customers on an emotional level when making a purchase. Currently, there is more and more competition at the retail level, which leads sellers to the intensive use of emotional stimuli at the point of sale. It is very important for consumers to have a unique shopping experience, and to achieve this, brands must first persuade customers to buy their products or visit their physical store or website, often through the use of emotional marketing stimuli. Thus, within the shopping environment, it is common to use elements in the place of sale such as the internal decoration, the smells, the intensity of the light, the music, the organization of the store or the attention perceived by the customer. The emotions derived from the consumer's exposure to such stimuli in the shopping environment, together with underlying psychological factors, have been positively related in the scientific literature to impulse buying behavior (Rook and Hoch, 1985; Rook, 1987).

There is an increase in the degree of materialism in society, which leads to consumers increasingly needing material goods to feel good, which can lead to insufficiently deliberate purchases and an imbalance between spending and income.

Some authors mention the relationship between impulse buying and regret, which is conceived as a combination of cognitive and affective components of impulse buying and, within this framework, they understand regret. In this sense, Verplanken and Herabadi (2001) develop a general measure of impulsive buying tendency that includes both cognitive aspects, such as the absence of planning, and affective aspects, including regret.

The authors point out that regret can be an emotional response that can occur after an unplanned purchase is made in this sense in a study conducted by Rodriguez, Saucedo, Hernandez and Gutierrez (2016), which aimed to identify compulsive buying behavior among men and women in Saltillo, Coahuila it was found that women show a more compulsive attitude when making unnecessary purchases, out of their budget, but that brings happiness unlike men, this addiction becomes in the short term in a pathological disorder.

In this sense in a study conducted by Rodriguez, Saucedo, Hernandez and Gutierrez (2016), which aimed to identify compulsive buying behavior among men and women in Saltillo, Coahuila it was found that women show a more compulsive attitude when making unnecessary purchases, out of their budget, but that brings happiness unlike men, this addiction becomes in the short term in a pathological disorder.

In this sense, it is proposed to analyze the internal factors that influence impulsive buying behavior. That is to say, to analyze the personal variables: age, gender and degree of materialism, and the psychological variables: emotional stability and level of self-esteem.

H1: There are significant differences in impulse buying behavior between men and women.

H2: There is a negative relationship between the level of self-esteem and the impulsive buying behavior of consumers.

## Methodology

This study is quantitative in nature and for the contrast of hypotheses an ANOVA analysis and correlations were carried out through the Statistical Package for Social Sciences (SPSS) program.

An instrument constructed by González, Apaolaza and Hartmann (2019) was selected which is divided into 4 variables: Impulsivity in shopping, emotional stability, self-esteem and materialism, with Likert-type scale from 1 to 7, where 1=strongly disagree and 7=strongly agree, based on the following scales respectively: the Impulsive Buying scale by Rook and Fisher (1995), the Emotional Stability scale by Gosling *et al.* (2003), the Rosenberg Self-esteem scale (Pullman *et al.*, 2000) and Richins' (2004) Materialism scale.

Rook and Fisher's (1995) Impulsive Buying Scale measures the relationship between impulsive buying and consumers' buying behaviors.

Rosenberg's (1965) self-esteem scale measures the degree of respect and acceptance that people have for themselves.

The emotional stability scale of Gosling *et al.* (2003) measures the ability to socialize, openness to change, self-control and planning, agreeableness and emotional instability.

Finally, Richins and Dawson's (1992) materialism scale treats materialism as a value that influences how people interpret their environment and how they structure their lives. Richins and Dawson define materialism as "the importance attached to ownership and acquisition of material goods in achieving major life goals or desired states."

Subjects will be selected randomly and by convenience in an age range between 25 and 65 years and the selection criteria will be as follows:

- Be between 25 and 65 years of age.
- Have their own income.
- Residing in the southern part of the state of Sonora (Alamos, Etchojoa, Huatabampo and Navojoa).

- The sampling method will be by convenience, respecting the inclusion criteria.

A type of convenience sampling has been used, arbitrarily sent through google forms the link to respond through social networks, email, through networks of people in conjunction with a group of social service students. A total of 322 responded but only 280 subjects met the selection criteria, and these responses were eliminated.

The reliability analysis of the instrument was done through Cronbach's Alpha.

**Results**

The results of Cronbach's Alpha consistency denoted .783 which indicates that the instrument is reliable since the closer it is to the number 1, the greater the reliability of the instrument.

Seventy percent of the respondents are female and the remaining 30% are male, 51% of them have a bachelor's degree, 32% have postgraduate studies and the remaining percentage has high school and middle school, according to the level of income that ranged between \$3,312 and \$55,000 or more Mexican pesos, 35% of the subjects under study earn between \$3,312.00 and \$9,186 pesos per month, 26% earn between \$9,187 pesos and \$13,369, being the low income levels the predominant ones in the selected sample.

Table 1 presents the mean values and standard deviations for each of the items that make up the impulse buying dimension; in general terms, the level of impulse buying is average in each of the items.

	N	Media	Deviation Standard
1.1. I often buy things spontaneously.	280	4.26	1.653
1.2. I often buy things without thinking, carried away by the emotion of the moment.	280	3.89	1.903
1.3. If I see something I want, I buy it.	280	4.28	1.863
1.4. "I buy first and think later" describes me well.	280	3.22	2.000
N valid (per list)	280		

**Table. 1** Descriptive statistics of the compulsive buying dimension

Source: Elaborated with own data

Table 2 shows the ANOVA model where impulse buying is related to the sex variable. Given the significance level of .781, it is established that there are no differences between impulse buying habits and gender.

	Sum of squares	gl	Mean quadratic	F	Sig.
Between groups	2.615	1	2.615	.078	.781
Within groups	9365.085	278	33.687		
Total	9367.700	279			

**Table 2** ANOVA model with sex variable Dependent variable: impulse buying

Source: Elaborated with own data

Table 3 shows the ANOVA model relating impulse buying with the variable level of schooling, obtaining a significance level of .854, which shows that there is no difference between impulse buying habits and level of education.

	Sum of squares	gl	Mean quadratic	F	Sig.
Between groups	26.360	3	8.787	.260	.854
Within groups	9341.340	276	33.845		
Total	9367.700	279			

**Table 3** ANOVA model with schooling level variable Dependent variable: impulse buying

Source: Elaborated with own data

Table 4 shows the ANOVA model where impulse buying is related to the income level variable. Given the significance level of .624, it is established that there are no differences between impulse buying habits and consumers' income level.

	Sum of squares	gl	Mean quadratic	F	Sig.
Between groups	88.401	4	22.100	.655	.624
Within groups	9279.299	275	33.743		
Total	9367.700	279			

**Table 4** ANOVA model with income level variable, Dependent variable: impulsive buying

Source: Prepared with own data

	N	Media	Deviation Standard
2.1. I would like to be able to buy more luxury items; it would make me happier.	280	3.35	1.976
2.2. I admire people who can afford expensive houses and cars.	280	4.01	2.021
2.3. I like to acquire expensive items with which I can impress and give a good image..	280	2.37	1.565
2.4. Some of the most important achievements in life include the acquisition of material goods.	280	3.99	1.845
N valid (per list)	280		

**Table 5** Descriptive statistics of the materialism dimensión

Source: Prepared with own data

Table 5 shows the mean values and standard deviations for each of the items that make up the materialism dimension, the item with the highest mean response "I admire people who can afford to acquire" is at a medium level, the item with the lowest mean response "I like to acquire expensive items with which to impress and give a good image" is at a low level.

The ANOVA tables performed with the categorical variables and materialism do not indicate significant differences.

	Sum of squares	gl	Mean quadratic	F	Sig.
Between groups	79.307	3	26.436	3.132	.026
Within groups	2329.603	276	8.441		
Total	2408.911	279			

**Table 6** ANOVA model with schooling level variable - Dependent variable: Self-esteem

Source: Elaborated with own data

Table 13 shows the ANOVA model where self-esteem is related to the variable level of schooling. Given the significance level of .026 lower than .05, it is established that there are differences between the level of self-esteem and the level of schooling of the participants.

	Sum of squares	gl	Mean quadratic	F	Sig.
Between groups	85.107	4	21.277	2.518	.042
Within groups	2323.804	275	8.450		
Total	2408.911	279			

**Table 7** ANOVA model with income level variable - Dependent variable: Self-esteem

Source: Elaborated with own data

Table 7 shows the ANOVA model where self-esteem is related to the income level variable, given the significance level of .042 lower than .05, it is established that there are differences between the level of self-esteem and the level of income perceived by the participants.

Finally, Spearman's correlation analysis was carried out where the self-esteem variable was directly correlated with the self-esteem variable Sig. .049 and the other correlations were low and/or negative It is demonstrated through the ANOVA analysis that H1 is rejected because there are no significant differences between the degree of impulsive buying between men and women, i.e. the sex of the subjects is not influential for their tendency to buy.

For H2 it was found that the self-esteem of the subjects surveyed does influence their relationship with impulse buying, as well as the level of schooling associated with the subjects and self-esteem with the level of income, these results are conclusive with the findings of Henning and Prestes (2009), who found that 24.3% of impulse buying is explained by low self-esteem and materialism. In this same sense there is agreement with the study conducted by Muñoz (2019) who found that although compulsive buying is not a determinant of low self-esteem, these variables are associated, i.e. they are linked to each other.

The statement made by Kacen and Lee (2002) is confirmed, compulsive action is directly related to self-esteem, as it tends to improve mood.

## Conclusions

Understanding consumer behavior allows us to analyze decision making in unplanned situations, which is crucial for decision makers in companies; however, these behaviors are often derived from personal situations, situational stimuli, intense emotions, social pressures, materialism or simply lack of self-regulation. This study shows how the self-esteem variable is influential in the level of impulsive purchases of the people surveyed, which usually has significant economic repercussions for consumers, and can lead to unnecessary expenses, debts and long-term financial problems.

Educating the population financially will allow them to make informed decisions about their purchases and with the level of indebtedness they manage as mentioned by Murillo, Acosta and Quintero (2021), but in the case of impulsivity, characteristics such as emotional intelligence and anxiety that lead to a low level of self-esteem should be addressed, Bojorquez (2021).

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## Police officers professionalization impact in the public security agencies of the Jalisco State through a hybrid model

### El impacto de la profesionalización de agentes policiales en las dependencias de seguridad pública del Estado de Jalisco a través de un modelo híbrido

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#### Abstract

The prevention of high-impact crimes is fundamental for the healthy coexistence and integral development of the population of all the entities of the country. In Jalisco, based on the events that occurred in 2020 and as a result of the work of the technical committees aimed at citizen security, the Government of the State of Jalisco instructed the Secretary of Planning and Citizen Participation and the Secretary of Innovation, Science and Technology, the implementation of a strategy that strengthens and consolidates the profiles of the police officers of the Secretary of Security, with the Technological University of Jalisco being responsible for operating the professionalization project, which was carried out during the year 2022, ending with the development of crime prevention skills, protocol management and dispute resolution among others, for which the UTJ through a hybrid model with the support of Information and Communication Technologies, professionalization was carried out of the state and municipal agents of Guadalajara, Zapopan, Tlajomulco and Tlaquepaque, generating positive impacts in 811 colonies from the Guadalajara Metropolitan Area.

**Professionalization, Police officers, Hybrid models**

#### Resumen

La prevención de delitos de alto impacto es fundamental para la sana convivencia y desarrollo integral de la población de todas las entidades del país. En Jalisco a partir de los hechos ocurridos en el año 2020 y como resultado del trabajo de las mesas técnicas rumbo a la seguridad ciudadana, el Gobierno del Estado Jalisco instruyó a la Secretaría de Planeación y Participación Ciudadana y ésta a la Secretaría de Innovación, Ciencia y Tecnología, la instrumentación de una estrategia que fortalezca y consolide los perfiles de los agentes policiales de la Secretaría de Seguridad, siendo la Universidad Tecnológica de Jalisco la responsable de operar el proyecto de profesionalización, el cual se llevó a cabo durante el año 2022, finalizando con el desarrollo de competencias de prevención de delitos, manejo de protocolos y solución de controversias entre otros, por lo cual la UTJ a través de un modelo híbrido con el apoyo de las Tecnologías de la Información y Comunicación, se llevó a cabo la profesionalización de los agentes estatales y municipales de Guadalajara, Zapopan, Tlajomulco y Tlaquepaque, generando impactos positivos en 811 colonias de la Zona Metropolitana de Guadalajara.

**Profesionalización, Agentes policiales, Modelos híbridos**

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## Introduction

The professionalization of Citizen Security actors has been a strategic policy in several states of the Mexican Republic, with the aim of improving the conditions of citizens with respect to crime prevention, such as femicide, torture, disappearance of persons and sexual violence. In this sense, there are states such as Mexico City, Mexico, Nuevo Leon and Guerrero, among others, that for years have bet on this strategy to improve the conditions of citizenship.

In the state of Jalisco, following the criminal acts that occurred in June 2020 and based on the results of the technical security roundtables, the Governor of the State instructed the Secretariat of Planning and Citizen Participation (SPPC) to work together with the rest of the Government actors, to work on the bases for the formation of the Police University, as a strategic element of professionalization in Jalisco, which contributes to the strengthening and consolidation of the efforts made from the police and traffic academy of the State of Jalisco through an initiative of Constitutional reform. So the SPPC in collaboration with the Secretariat of Innovation, Science and Technology (SICyT) as a strategic leader which integrated the Technological University of Jalisco (UTJ) to contribute to the citizen security strategy received by police officers of the Secretariat of Security (SS), according to Espinoza (2017), the new conceptualization that integrates elements that do not violate the labor rights of police officers.

The UTJ implements this project to promote the training and performance improvement of police officers in the state of Jalisco, up to 40 participants through a mixed or "blended" modality defined by Sanz *et. al* (2009) as a combination of face-to-face learning processes integrating distance learning technologies, which were carried out through Virtual Learning Environments in a technology-assisted model.

Professionalization has a systemic approach based on competencies that prioritizes the comprehensive civilian training of police students. Based on the Pedagogical Guide for the curriculum design of higher police training of the National Conference of Justice Procurement (2014), the following were established as pedagogical and andragogical principles of the curriculum:

- Socio-formative approach.
- Ethics of care.
- Gender perspective.

With the overall objective of ensuring that police officers of the State of Jalisco, responsible for security and order in public places, acquire and strengthen knowledge and skills for the analysis of violence and crime from a preventive approach, co-production of citizen security, in the community and urban environment.

For the operational structure of the program, an academic committee was formed to review progress, evaluate the process and develop proposals for continuous improvement, which was formalized through a collaboration agreement signed in July 2022, starting activities in August of the same year at the UTJ facilities in its Academic Unit of Ciudad Creativa Digital.

The program was integrated by 13 modules with the topics of: I Security models, II Policies of integral prevention of violence and crime, III Community prevention and situational prevention, IV Prevention of vulnerability and risk to high impact crimes, V Teamwork skills and empathy (self-care), VI Protocols of police action with a focus on citizen security, VII Protocol of arrests, protocol for transfers and legitimate use of force, VIII Communication of citizen security (oral and written), IX Attention to crime victims and complainants 1, X Attention to crime victims and complainants 2, XI Alternative means of dispute resolution 1, XII Alternative means of dispute resolution 2 and XIII Culture of peace and prevention of violence.

The courses were taught by a teaching staff of 10 expert instructors with local and national representation, belonging to the University of Guadalajara (UdeG), Monterrey Institute of Technology and Higher Education (ITESM), Western Institute of Technology and Higher Education (ITESO), Institute of Alternative Justice of the State of Jalisco (IJA), Jalisco Institute of Forensic Sciences (IJCF), Institute for Economics and Peace (IEP), the civil association Corpo Creativo A.C., as well as consultants in business, public policy and violence and crime prevention, as well as consultants in business, public policy and crime and violence prevention.



In the operation of the project, four police stations of the municipalities of the Metropolitan Zone of Guadalajara and personnel of the Secretariat of Public Security were represented, implementing a Virtual Learning Environment (EVA) exclusively for the development of the project, integrating the image, registration administration, creation of institutional email accounts and work on the platform, in addition to the help desk in which technical support and operational and administrative guidance was provided, using electronic means (videoconferences, emails and Whatsapp messages), telephone and face-to-face attention.

El diseño del proyecto en una modalidad mixta permitió la participación de forma sincrónica (presencial y en línea) y asincrónica para aquellos casos que derivado de la naturaleza de sus funciones sustantivas no podían estar físicamente en el aula.

**Methodology**

The development of the project contemplated the following phases: analysis and planning, design, operation, evaluation and closure, considering the human, technological and financial resources required and budgeted for its execution, starting activities in February 2022 and ending in December of the same year.

The analysis and planning defined the competencies, pedagogical principles, entry and exit profile of the participants, as well as the teaching profile and approaches, considering at all times a socio-formative approach, the ethics of care and gender perspective, through working groups organized by the SPPC, In the same way, UTJ established the hybrid model with the definition of the sessions and face-to-face activities, as well as the technological tools to be used, being Moodle an EVA centered on a paradigm of social constructivism, which Dávila (2011) defines as the construction of knowledge created collaboratively, favoring the learning process through social collaboration.

In this sense, the professionalization program was registered in the General Directorate of Incorporation and School Services of the State of Jalisco, in February with the certificate ESDIP-2022-002 with a curricular value of 8 credits and 130 hours.

At this stage, the mechanisms for the promotion, integration and registration of participants were also defined, including elements that would allow for a significant representation of operational and managerial profiles from the SS Citizen Security areas and the police stations with the largest populations in the Guadalajara Metropolitan Area, such as Guadalajara, Tlaquepaue, Tlajomulco and Zapopan. The thematic content of the course used in the promotion is shown below:

MÓDULO	Fecha
Ámbitos de seguridad	11 y 12 de agosto de 2022
Políticas de prevención integral de la violencia y el delito	16 y 19 de agosto de 2022
Prevención comunitaria y Prevención situacional	20, 23 y 24 de agosto
Prevención de la vulnerabilidad y el riesgo ante delitos de alto impacto	26 de agosto, 7 y 8 de setiembre
Habilidades de trabajo en equipo y empatía	8, 9 y 10 de septiembre
Protocolos de actuación policial con enfoque de seguridad ciudadana	16, 27 y 28 de septiembre
Protocolos de detenciones, Protocolos de traslado y Utilización legítima de la fuerza	26, 29 y 30 de septiembre
Comunicación de la seguridad ciudadana (oral y escrita)	3 y 7 de octubre de 2022
Atención a víctimas del delito y denunciantes I	10, 14 y 15 de octubre
Atención a víctimas del delito y denunciantes II	17, 20 y 21 de octubre
Medios alternos de solución de controversias I	24, 27 y 28 de octubre
Medios alternos de solución de controversias II	31 de octubre y 3 de noviembre
Cultura de paz y prevención de la violencia	10 y 11 de noviembre de 2022

**Figure 1** thematic content  
*Own Elaboration*

The design of the educational resources to be implemented in the process was carried out using the Analysis, Design, Development, Implementation and Evaluation (ADDIE) methodology defined by Esquivel (2014), as a model used in instructional design that is integrated by the phases of analysis, design, implementation and evaluation, which were applied for the development of all the resources stored in the project. A sample of the material published on the platform is presented below:



**Figure 2** Module design  
*Own Elaboration*

## Article

Once the educational resources were designed, the validation process was carried out, from which the team of the Virtual Environments Management and Help Desk of the UTJ carried out the validation in technical aspects, multimedia design and instructional design, which allowed the release of the resources, giving rise to the generation of institutional email accounts and the enrollment of participants in the EVA.

The operation of the training process began with the sending of access and welcome letter to the participants, in addition to the induction session in the institutional environments and platforms, the presentation of the program and the delivery of the physical and digital materials for the development of the project. The following is the home page of the program in the Virtual Environment:



**Figure 3** Integration of modules  
*Own Elaboration*

Once the training process was underway, a record of attendance per session was implemented for the on-site activities and the platform work, which allowed the generation of the participants' evidence portfolios during the operation; likewise, in each of the on-site sessions there was remote transmission of the sessions and their recording, This made it possible for users who could not physically attend the sessions to join the process in real time, while those who coincided with a police operation, event or commission could obtain the knowledge and carry out the face-to-face activities through the platform and with the support of the recordings, which were published immediately at the end of each session.

The following is the attendance record of a module:

**Figure 4** Attendance record  
*Own Elaboration*

The help desk implemented consisted of an electronic system from which the participant and facilitator could request technical support by generating a ticket, which were immediately attended by the technical support team, in addition to support by other means such as email, whatsapp, videoconferences, telephone calls and on-site attention at the beginning of each face-to-face session. The following is the home page of the technical support application or help desk:



**Figure 5** Help desk  
*Own Elaboration*

The performance and progress of the program was reported on a weekly basis to the authorities of the Secretariats and agencies that were part of the project via e-mail, in which the areas of opportunity, compliance with activities, attendance statistics, delivery of grades and administrative processes were notified. The following is an excerpt from a technical sheet:

Dependencia	Jueves 18		Viernes 19	
	Mujeres	Hombres	Mujeres	Hombres
Comisaría de Zapopan	2	3	2	3
Secretaría de Seguridad del Estado de Jalisco	5	5	4	5
Comisaría de Guadalajara	4	1	4	1
Comisaría de Tlaquepaque	3	1	3	1
Comisaría de Tlajomulco	2	0	2	0
Total	16	10	15	10
	26		25	

**Figure 5** Excerpt from the data sheet  
*Prepared by the facilitator*

The evaluation of the training process was carried out through a continuous and permanent model which, according to Coll *et. al* (2007), allows the facilitators to provide a precise follow-up of the learning process and thus obtain multiple evidences of the results and the development of the competencies achieved; this evaluation was recorded in the EVA, so that the participant had the information of each of the activities, results and modules of the program. Likewise, these results were delivered by the facilitators through a physical medium where they recorded the academic progress of each of the participants.

In the closing phase, satisfaction surveys were implemented to evaluate the quality of the materials, technological support, facilitator performance and the institution's services and facilities; the results were integrated into a statistical report with graphs that were delivered to the heads of the agencies involved in the project. Likewise, a technical report was prepared with all the evidence, deliverables, results and deviations of the project; this input was delivered to the Ministries of the Government of Jalisco involved, as well as to the heads of the police stations of Guadalajara, Tlajomulco, Zapopan and Tlaquepaque. A satisfaction survey is presented below:

**Figure 6** Satisfaction survey  
*Own Elaboration*

At this same stage, the ceremony for the delivery of certificates and diplomas to the participants took place through the Secretariat of Innovation, Science and Technology. Images of the event are shown below:



**Figure 7** Graduation Ceremony  
*Own Elaboration*



**Figure 8** Graduation Ceremony  
*Own Elaboration*



## Results

The results of the project generate a positive impact on operational aspects of the Tlaquepaque, Zapopan, Tlajomulco and Guadalajara precincts, which according to CONAPO (2020) have a population density distributed in 811 neighborhoods, of which the personnel who participated have direct contact with citizen attention.

In the municipality of Tlaquepaque, with a total of 249 neighborhoods, an average of 1 unit per month has generated citizen attention in more than 100 neighborhoods, 1 unit between 75 and 100 neighborhoods, 2 units between 50 and 75 neighborhoods and 2 units in less than 25 neighborhoods.

In the case of Guadalajara, with a total of 284 neighborhoods, an average of 2 units in more than 100 neighborhoods, 1 unit between 50 and 75 neighborhoods, 1 unit between 25 and 50 neighborhoods and 2 units in less than 25 neighborhoods per month.

In Zapopan, with a total of 84 neighborhoods, an average of 1 unit per month has generated an average of 1 unit between 50 and 75 neighborhoods and 2 units from 25 to 50 neighborhoods.

In the municipality of Tlajomulco, with a total of 194 neighborhoods, an average of 1 unit per month has generated citizen attention between 75 and 100 neighborhoods and 1 unit between 50 and 75 neighborhoods.

In the case of the participants of the Secretariat of Security, although they do not generate actions of direct operative attention in society, they are those who coordinate and establish the mechanisms of support for the Police Stations mentioned above.

This is a follow-up strategy to the project of the Government of the State of Jalisco based on the technical tables towards Citizen Security that were generated with the recognition that there are areas of opportunity in the police forces, coordinated by the SPPC, the SICyT and the SS through the UTJ, in which it was possible to integrate highly qualified personnel with local and national recognition in their areas of application, generating academic and social collaboration networks.

UTJ, through the professionalism and dedication of its academic and management staff, was able to carry out the development and implementation of this project, generating a direct impact in 4 municipalities that make up the Metropolitan Zone of Guadalajara, generating an average of 80% to 90% of the application of knowledge in the participants who provide attention to citizens.

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## Conclusions

According to the National Population Council (2020), in Jalisco there are more than 8 million 530 thousand inhabitants with specific needs on citizen security determined by the technical tables, likewise Jalisco is one of the States that still does not have a professional training institution with an academic degree that provides professional competitiveness with respect to the rest of the professions in the market.

Therefore, the Constitutional Governor of the State of Jalisco, Mr. Enrique Alfaro Ramirez, instructed the State Government agencies and structures to coordinate in order to achieve these objectives.

In this sense, the SPyPC, the SICyT and the SS, formed a work team that through the UTJ and academic allies, governmental and civil organizations, developed and implemented this project as a first stage for the professionalization of the actors in charge of Citizen Security, which established the first efforts and guidelines for the implementation of the University.

Participants acquired basic and general knowledge of public, private, citizen and human security, becoming aware of the importance of the pro-person principle and the co-production of security in the community, as well as the centrality of contexts and environments in the face of vulnerability and risk; based on a systemic approach by competencies, giving priority to comprehensive civilian training, with pedagogical and andragogical principles with socio-training approaches, citizen ethics and gender perspective; through a techno-pedagogical ecosystem constituted in a hybrid or "blended" scheme, which was mediated by an EVA, communication platforms, help desk, online and face-to-face collaborative activities, technological equipment for the operation, transmission, recording and distribution of resources, without detracting from the traditional learning process considering the learning styles through physical media and conventional tools.

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## Technology applied in inventory control, case study: Department of measurement, connections and services of the Federal Electricity Commission

### Tecnología aplicada en control de inventarios, caso estudio: Departamento de medición, conexiones y servicios de Comisión Federal de Electricidad

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#### Abstract

The use of technology represents making processes more efficient and obtaining better results in their control. For government institutions such as the Federal Electricity Commission, it represents benefits in the optimization of resources and improvements in the services provided to the users of the organization, likewise it implies savings due to the good performance in the use of the materials that uses this department, focused on providing services to users, since costs are lowered. The study has been carried out through a diagnosis to know the real causes of the problem in the area, various instruments have been used to collect information to later process through tools that allow us to know the root cause of the problem. The analysis was carried out through the SWOT matrix to find opportunities for improvement, to end with the strategic proposal as well as the relevant actions, and the importance of having a contingency plan that allows controlling the strategic actions designed.

**Technologies, Process efficiencies, User services, Optimization of resources, Improvements in customer service**

#### Resumen

La utilización de la tecnología representa eficientar los procesos y la obtención de mejores resultados en el control de estos. Para instituciones gubernamentales como lo es, Comisión Federal de la Electricidad, beneficios reales como la optimización de los recursos y mejoras en los servicios que se prestan a los usuarios del organismo, así mismo implica ahorros por el buen desempeño en la utilización de los materiales que utiliza este departamento, enfocado a prestación de servicios a usuarios, ya que se abaratan los costos. Es estudio se ha realizado mediante un diagnóstico para conocer las causas reales de la problemática del área, se han utilizado diversos instrumentos para recopilación de la información para posteriormente procesar a través de herramientas que permitan conocer la causa raíz del problema. El análisis fue llevado a cabo mediante la matriz FODA para encontrar las oportunidades de mejora, para finalizar con la propuesta estratégica, así como las acciones pertinentes, y la importancia de contar con un plan de contingencias que permita controlar las acciones estratégicas diseñadas.

**Tecnologías, Eficiencias de procesos, Servicios a usuarios, Optimización de recursos, Mejoras en atención a usuarios**

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## Introduction

Baja California Sur is a young state, with recent regional development, which implies that the governmental system optimizes the performance of the services it provides and favors the participation of all the actors of the social system, both to entrepreneurs, as well as to raise the quality of life of citizens, by having elements that favor and provide welfare, real and adequate improvements to the needs of the social fabric. Thus, it is important to have accessible services with prices within the reach of the users, as well as quality and quick response in the attention of services provided by the Federal Electricity Commission to the inhabitants of Baja California Sur, which due to its own characteristics of location as well as natural resources, the orography that distinguishes it as a state far from industrial resources, and therefore with high prices for the transportation that implies putting them within the reach of the population, which brings as a consequence that the governmental services are impacted in the same way. From the above derives the importance that the controls of the materials and equipment used are safeguarded and controlled in an efficient way in the search to optimize those resources.



**Figure 1** Population and average annual growth rate  
[www.inegi.org.mx](http://www.inegi.org.mx) > doc > cpv2020\_pres\_res\_bcsBaja California Sur – INEGI

To supply energy inputs and goods required for the productive and social development of the country in an efficient, sustainable, economic and inclusive manner, through a policy that prioritizes national energy security and sovereignty and strengthens the public electricity service, is the mission that distinguishes the public organization such as the Federal Electricity Commission, which, like any other company, uses the administrative process. The art of knowing how to manage organizations involves the search for productivity with efficiency, (Correa, 2019).

The control process (Karla, 2019) mentions, as the establishment of systems that allow measuring current and past results in relation to the expected, in order to know if they have obtained what was expected, correct, improve and formulate plans, this measurement of results, obtained once the processes and procedures are implemented, is done in order to detect deviations and establish measures or corrective actions necessary, so that the results are related to the designed standard.

The control system in the organizations, applies in all functional areas of the same, this study is located directly in the inventory control of the measurement, connection and services area, whose functions are the attention of services requested to that organization by the users of the system conformed by the Federal Electricity Commission, represents one of the most important activities of the company. It consists of several tasks, but above all to have a warehouse of materials, equipment and products that allow to satisfy the needs of services requested by the local society, in time and form, so it is necessary and indispensable the effective control of the flow of inputs and outputs of these products in that space called warehouse.

Inventory control is one of the keys to keep up to date information on the volume and validity of your stored products, so having a good inventory control management can be a somewhat difficult task to perform, especially if you do not have a system that allows companies to have full visibility of their products, when entering and leaving the warehouse, represents the process that organizations perform to manage and maintain control of the goods they have registered in the warehouse.

There are different strategies and methods to maintain a good performance at the time of inventory control. Having an efficient control system allows total visibility of the products in stock, facilitates and streamlines any type of process. Inventory control is a very important activity because having an efficient storage of products, avoids double purchases of products, not knowing clearly the existence of products that are already in inventory, and avoids keeping obsolete materials and products in the warehouse. All organizations need to have a control of supplies and sales to maintain optimal levels of supply and delivery of products to both customers and suppliers.

Obtaining effectiveness within the organization implies productivity with efficiency and effectiveness, achieving added value to the products through controlled processes implies the optimization in the use of materials.

Notwithstanding the importance that has the provision of services of the department of measurement, connection and services of the Federal Electricity Commission in the city of La Paz, B.C.S., The workers that make up the crews for repairs and corrective and preventive maintenance, once they are assigned to the work, enter the area without control to obtain the materials and equipment they consider necessary to provide the requested service, but there is no format or list to record the exits from the warehouse. Having an effective control process and the use of technology makes it possible for the materials and equipment located in the warehouse to be used more efficiently and effectively.

The benefits to be obtained are: optimization of resources, avoidance of losses of equipment and materials, risk prevention by not having the material well organized both for the workers and for the organization itself, and for the users it represents that the costs in the receipts of energy consumption provided by the company can be reflected in lower service costs, since the costs of materials and equipment increase the costs of the organization, which in turn impacts the prices charged to consumers.

Inventory control methods. This is the set of procedures for planning and controlling the products or materials used by a company to operate efficiently. Its management brings benefits such as the reduction of losses and storage costs. It is a process that helps to ensure that an inventory is available when it is needed (Caurin, 2017), among others are:

The EOQ (Economic Order Quantity) system is also known by its Spanish acronym CEP model (Economic Order Quantity) or by economic order batch, takes into account a constant demand and known a priori, and based on this tries to know that through the cost of maintaining an inventory and the cost of ordering the order can obtain the optimal quantities to order, all while minimizing the cost of inventory to the maximum. (Betancourt, 2022)

ABC method, is an inventory classification method that allows associating each SKU with a class or category of products, with respect to their importance for the company. This method identifies the products that are critical for the success and profitability of the business (Madero, 2022). This is achieved by calculating the consumption value of each SKU, i.e., the number of units sold, multiplied by their unit cost.

- Warehouse layout: The design and distribution of space is apparently a simple matter, but it is complicated to solve in practice. When deciding the layout that a warehouse should have, both internally and externally, there can be three different situations that may require a different space allocation, such as the installation of new warehouses, the expansion of existing ones or reorganization. (Mecalux, 2023)

The location of machines, tools and accessories in the right place; the rational input and output of materials and products before, during and after their process in the plant, passing from the material warehouses, requires knowledge and preparation (training) for the good of the company. (Montana, 2021).

The general distribution of a facility must be in accordance with a good storage system that covers needs such as:

- The best use of space
- Minimization of the handling of the goods
- Ease of access to the stored product.
- The maximum possible rate of rotation
- Maximum flexibility for product placement.
- Ease of control of the stored quantities (Mecalux, 2023).

To carry out the research, the Strategic Planning method was used: A process that allows defining and executing a set of actions to achieve the objectives or purposes of the organization in the short, medium and long term. This is done through an analysis of the internal and external environment of the company to take advantage of opportunities and mitigate risks. A strategic plan allows the company's managers to define the objectives to fulfill the organization's mission and achieve its vision.



All companies, regardless of size, need to work under a strategic map, since with a determined route they can efficiently take advantage of resources and time management. It is a tool that involves the entire organization, since a strategic analysis serves to jointly determine the objectives and the action plan to achieve them. It is extremely useful to align the work team to employ a common language with the same information, fostering a sense of responsibility and motivation to achieve the goals in the desired future.(Decoletaje, 2019).

Advantages of strategic planning:

- Reduces uncertainty in risk management.
- It fosters motivation and commitment of employees.
- It operates with the essential focus on objectives and results.
- It intensifies efficiency in the use and optimization of resources.
- With the competitive advantages it provides, it promotes differentiation with respect to the competition.
- All decisions are aligned with goals.
- Improves decision making.
- It allows the analysis of measurable data and performance indicators to evaluate the performance of both employees and the company.
- Increases profitability, as well as market share.

Stages: Creation of the strategy, Planning of the strategy, Alignment of the organization's efforts with the strategy, Planning of the operation in the organization, Control and learning of the operation.(Decoletaje, 2019)

One of the vital objectives of the organization is survival and the main factors of survival are: products, services or satisfiers, market with customers who have needs, but can choose, competition from other organizations for the market, technology, personnel and capital (Antonio, 2023)

## Methodology

### Type of research

Research is applied and field research

### Development

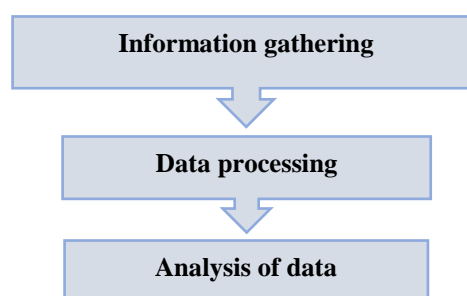


Figure 2 Diagram of the research development

### Four instruments were used to collect the information:

1. Questionnaire that was applied to the crew chiefs to know how the management of resources and equipment necessary to carry out their tasks is carried out.
2. Interview with the head of the department, to know the current status of the problems that occur systematically in the area.
3. Observation matrix to visualize the current situation of the warehouse.
4. Ichikawa Diagram to know the root cause of the current situation of the warehouse area.

### Data processing

For the questionnaire applied to the crew chiefs, they were plotted with Excel application, obtaining:

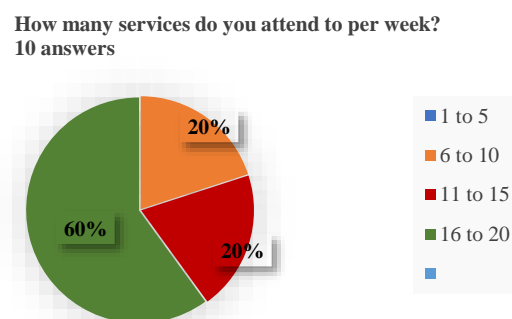


Figure 3 Frequency of service attention

How often do you take material out of storage?  
10 answers

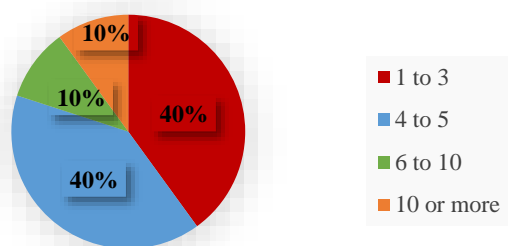


Figure 4 Frequency of material requirements

How far in advance do you request warehouse material  
10 answers

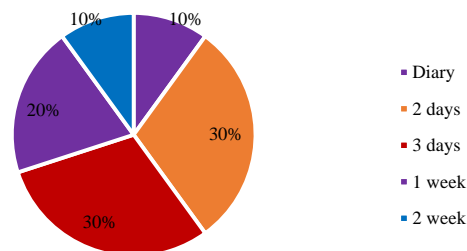


Figure 9 Lead time in requesting materials from the warehouse

Do you require a receipt when removing material from the warehouse?  
10 answers

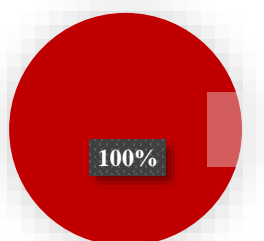


Figure 5 Use of receipt for materials

When you require material, it is attended to by someone  
10 answers

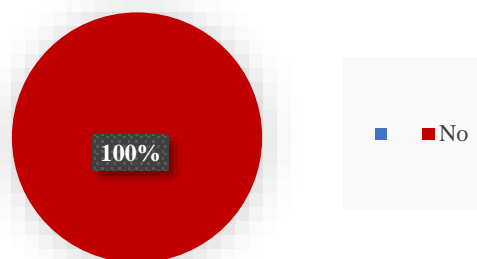


Figure 10 Attention by warehouse personnel

¿What type of materials do you use most frequently?  
10 answers

-Connectors, insulating tape, drop cable.
-Safety ring, connector, adapter.
-Insulating tape, cover

Figure 6 Frequency of use of materials by type

What type of material do you use least frequently?  
10 answers

-Blades, lightning separators
-Plug base terminal, multiple cable
-Blades, lightning separators
-Fifth terminal
-Fifth terminal

Figure 7 Frequency of lesser use of materials

Do you think there is good control of entry and exit of material?  
10 answer

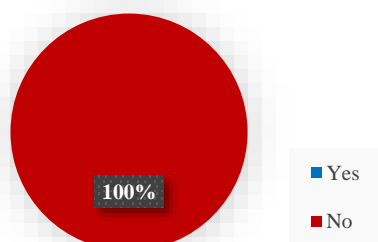


Figure 8 Use of warehouse controls

The interview conducted with the head of Metering, Connections and Services, the information was processed in a concentrator table (see table 1).

Criteria	Response
Inventory problems	There is no control of materials, there is no reconciliation of materials that we are required by procedures. Therefore, there is a mess, which has neither head nor tail and we do not have any kind of order.
Negative impact, due to current inventory status	Ignorance of the costs of materials of the department and ignorance if there is misuse of not complying with the guidelines and audits that have been presented to us.
Positive impact due to current inventory status	It is kept in a locked area and only the two process managers have the key to intervene, so we can have a little more "Controlled" not completely, but it is what works best for us.
Materials difficult to inventory	Connectors, fuses, tapes
Materials that are easy to inventory	Connecting cable, short-circuit wiring and line separators.
How do you envision the warehouse inventory in the future?	With a stock of materials, maximums and minimums, updated formats, catalogs, vehicles, supervisors, historical consumption by personnel and everything very well ordered and classified to be able to find what is needed more easily and quickly.

Table 1 Interview applied to the head of the Metering, Services and Connections department.

For the observation matrix: it was classified by department sub-areas, presenting evidence of their current status (see table 2).








Observation Criteria	Yes	no	Observation	Recommendation	Evidence
<b>Cleaning</b>					
Dirt and dust on floors, shelves and/or materials.	x		If there is soil throughout the warehouse.	Constant cleaning is recommended, as dirt will continue to appear as long as the "walls" of the warehouse are made of cyclone mesh.	
B litter on floors	x		There is trash, such as paper, food wrappers, and tree leaves.	It is recommended to have someone in charge of cleaning at least twice a week to keep the work area clean.	
Animals / insects or rodents.		x	No animals were observed.	It is recommended to keep the area clean, because if any animal is present, there is a risk of having a plague.	
<b>Order</b>					
Materials are in order.		x	Most materials numbered.	It is recommended to separate each material by categories, to make identification easier.	
Difficulty in finding materials.	x		Materials together and mixed.	It is recommended to separate each of the materials, either by size and utility.	
<b>Classification</b>					
Materials sorted by name.	x		Yes, they are marked with a name on the tags.	It is recommended that the tag be amended so that the information on the tag is not erased.	
Materials are found with # control.	x		Yes, the number is on the tag.	The recommendation is the same as in the classification of the name.	

Table 2 Observation matrix

With respect to the Ishikawa diagram used to find the root cause of the problem, the following criteria were included: service, communication, controls and organization (see figure 10).



Figure 10 Ishikawa Diagram (cause-effect)

Data analysis

After having processed the information, using the SWOT matrix, a strategic planning analysis tool, the Strengths, Weaknesses, Threats and Opportunities were determined (see figure 11).



Figure 11 SWOT Matrix

In order to determine the strategies that make up the proposed plan, we proceeded to analyze the strengths, weaknesses, internal environment vs. external environment, threats and opportunities using the Mini-Maxi Matrix. Environment against the organization's external environment, threats and opportunities using the Mini-Maxi Matrix (See Table 3).

External environment analysis		
	Opportunities	Opportunities
Internal environment analysis	More satisfied users	More satisfied users
Strengths	Compete with alternative energies by improving their prices.	Compete with alternative energies by improving their prices.
Large amount of materials.		Opportunities
Economic resources are available.		
Space assigned for the different materials.		
Weaknesses	Adaptive strategies	Survival strategies
Poor organization.		
No personnel in charge of the area.		
Poorly conditioned space.		
No records of incoming and outgoing materials.		
Loss of material.	Optimize the use of warehouse materials using software such as "App Sheet".	Controlling cost increases for users.
Improper use of material.	Proper physical organization of warehouse materials.	Optimization of material resources.

Table 3 Mini-Maxi nuance

Through which the definition of the strategies was determined:

Opportunities for improvement detected through the analysis performed:

- Optimize the use of warehouse materials using technological innovation software.
- Adequate physical organization of warehouse materials.
- Controlling price increases for users.
- Optimization of materials resources.

Results

The objective of the project is: strategies to harmonize the physical inventory of the Metering, Services and Connections department with the organization's information system, so the strategic planning methodology has been used to finalize the strategies that make up the proposed strategic action plan to reach the planned objective (see table 4).

Strategy	Method	Deadline	Resources	Performance Indicator
Optimize the use of warehouse materials using innovative technological software.	1. Determine the ideal software to make the physical and digital control of the materials warehouse. 2. Training of the personnel that will carry out the software management. 3. Start up.	1 week 1 month 3 months	Acquisition of software. 3 computers 4 testing	Knowledge and implementation of the use of software in the area.
Adequate physical organization of warehouse materials. Signage of warehouse spaces in accordance with Mexican Official Standard NOM-003-SEGOB-2011.	1. Acquire the shelves. 2. Organize distribution of materials and equipment. 3. Classification according to own characteristics. 4. Organize arrangement of materials and equipment	1 week 1 month 1 month 1 month 1 week	Purchase of 4 shelves to store the equipment and materials used for maintenance. Purchase materials to carry out the signage. Instructor	Physical location of materials and equipment on the shelves and thus maintain it in a systematized manner by 100%. Contingency plan completed and implemented 100%.
Contingency plan design.	1. Detection of areas and risk levels. 2. Knowledge of the applicable standard. 3. Preparation of signage. 4. Carry out the signage.  1. Diagnosis of risk areas. 2. Training and coaching. 3. Appointment of the people responsible for the actions to be taken according to the risks.	1 month 1 week 1 week 1 week		
Control the increase of costs for users.	1. Systematize the use of software to keep track of all inputs and outputs	6 months		100% software implementation.
Optimization of material resources	1. Apply controls 2. Verify quality controls for the acquisition of materials and equipment. 3. Expand supplier portfolio	1 mes month 1 month 1 month		1 annual audit

Table 4 Strategic plan to harmonize the physical inventory of the Metering, Services and Connections department

Regarding the implementation of the project, work has also been done for its start-up, obtaining:

A Layout was designed to refer to the way the elements and shapes are distributed within the warehouse. A photo was added on the side of each area in order to accommodate an optimal way in which to enter a high amount of product and store it in a better way so that employees can have quick access to the materials that will be used every day. The warehouse is divided into two areas that are materials for the linemen and calibrators, on the left side should be the material for the linemen and the right side for the calibrators. In point number 4 is the roof of the warehouse, here we add the stairs and other materials that have almost no use (see Figure 12).

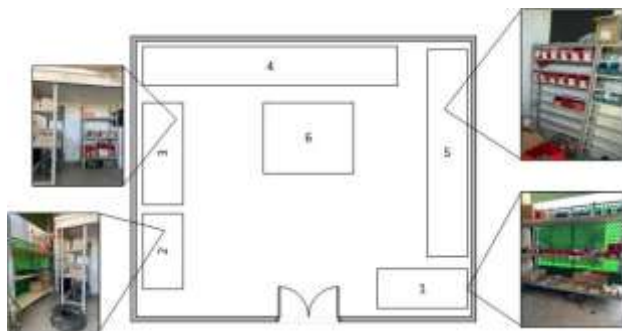


Figure 12 Layout design

### App sheet application

In order to make decisions regarding the use of technology to harmonize inventory control, and after having known the attributes of the software available for this purpose, it was decided to implement this tool which is App sheet which is a friendly application where the options allow designing the catalog of materials, personnel, vehicles, etc., in addition, it can be signed digitally.

Appsheet, allows all members of the organization to create and expand applications without programming.

### Advantages

- Automates business processes, such as order approvals and user notifications.
- Automatically generates actions and views based on user intent with Google AI and machine learning.

- Provides control for citizen developers to build key applications quickly.
- Creates apps that can be used on computers, mobile and tablets.
- Enables connection to multiple data sources, from Google Spreadsheets to Salesforce.

Encourages innovation: IT and citizen developers can collaborate effectively with business policy and management functions.

Streamlines work: Enables time-saving applications to be created and integrated with tools that are already in use.

Empowers workers: it enables the full potential of your data to be harnessed so that all employees can create customized applications and automations. For use (see Figure 13)



Figure 13 Logging into the application

**Step 1:** Access a device which contains internet and enter the Google tab.



Figure 14. Search

**Step 2:** enter the word "App sheet" in the search engine and click on the first link that appears.





Figure 15 Start

**Step 3:** When accessing the first link the following window will appear, click on the "Start" section.



Figure 16 Log in to account

**Step 4:** When logging in a window will appear where it will be indicated which actions the application can perform, when reading what it indicates to press the section of "Allow". Once logged in to the application you will have several options to adapt to the needs of each organization.

## Acknowledgements

This project has been carried out with the funding of the Tecnológico Nacional de México, Campus Instituto Tecnológico de La Paz, in the same have participated and supported people who in one way or another have contributed to obtain results, both students (residents), as teachers, researchers and staff of the Institute, as well as workers and officials of the organization, with the intention that the results are functional and the benefit is learning and its application, as can be mentioned the project is already in the process of implementation.

## Conclusions

The objective of the research has been fulfilled: Strategies to harmonize the inventory control system of the department of Measurement, Connection and Services, of the Federal Electricity Commission, in the City of La Paz, with the information system of the organization, which facilitates the identification of the material and manages in a more systematized way through the App Sheet program with a more dynamic and accessible report for the boss and for the workers.

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## TikTok as a learning strategy for English language proficiency in higher education

### TikTok como estrategia de aprendizaje para el dominio del idioma inglés en la Educación Superior

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#### Abstract

TikTok is used as an innovative language learning tool to improve fluency in English, favoring communication and grammar skills among university students. The study shows the analysis of video creation with seven specific tasks, namely: cultural investigations, personalized vocabulary speeches, grammar-focused discussions, role-play conversations, oral reading reports, listening comprehension and grammar explanations. The students created the TikTok videos and interacted with their peers; and these were used as part of the assessment of their subject. For data collection, a questionnaire was designed and included, in addition to conducting focus groups to collect information about the experience of its implementation. The results indicate that TikTok videos, as short lessons, integrate seamlessly into students' academic routines, allowing for error correction, grammar and vocabulary practice, improved pronunciation, increased confidence in speaking English, and quick class review. It is suggested that optimal recording conditions and creative effects be taken into account, respecting the privacy of those who create it. In conclusion, TikTok is considered to be a valuable tool to improve English language proficiency, promotes creativity, critical thinking and understanding of concepts. It is suggested that research be continued to explore long-term impacts.

**Educational Innovation, TikTok, Higher Education, English Teaching**

#### Resumen

TikTok se utiliza como una herramienta innovadora de aprendizaje en idiomas para mejorar la fluidez en inglés, favoreciendo la comunicación y las habilidades gramaticales entre los estudiantes universitarios. En el estudio que se presenta, se muestra el análisis de la creación de videos con siete tareas específicas, a saber: investigaciones culturales, discursos de vocabulario personalizados, discusiones centradas en la gramática, conversaciones de juegos de roles, informes orales de lectura, de comprensión auditiva y de explicaciones gramaticales. Los estudiantes crearon los videos de TikTok e interactuaron con sus compañeros; y éstos se emplearon como parte de la evaluación de su asignatura. Para la recolección de los datos se diseñó e incluyó un cuestionario, además de realizar grupos focales para recabar información en torno a la experiencia de su implementación. Los resultados indican que los videos de TikTok, como lecciones cortas, se integran perfectamente en las rutinas académicas de los estudiantes, lo que permite la corrección de errores, la práctica de gramática y de vocabulario, una mejora en la pronunciación, una mayor confianza al hablar inglés, y una revisión rápida de la clase. Se sugiere que se tome en cuenta las condiciones de grabación óptimas y de efectos creativos, respetando la privacidad de quien lo crea. En conclusión, se considera que TikTok es una herramienta valiosa para mejorar el dominio del idioma inglés, promueve la creatividad, el pensamiento crítico y la comprensión de conceptos. Se sugiere que se continúe la investigación para explorar los impactos a largo plazo.

**Innovación Educativa, TikTok, Educación Superior, Enseñanza de inglés**

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## 1. Introduction

Covid-19 triggered a global health crisis with profound social, cultural, economic and academic implications. Social networks proved to be a means of communication for transmitting key information on matters of general interest, and quickly acquired a decisive role during the pandemic. TikTok was one of the networks that emerged to transmit short videos about experiences and experiences to develop digital content. Subsequently, it was used as part of teaching strategies as well as various educational applications.

Thus, during the confinement, the educational community adopted new educational tools, such as the TikTok platform, in order to support and consolidate student learning, gradually making learning academic content through technology more important. Some teachers tested the platform as an online classroom tool and found that, short videos improve retention (Yang, 2020); help expand vocabulary (Fahin, 2020); the activity has a positive impact on motivation within ESL courses (Adnant *et. al*, 2021); it increases confidence in conversational English (Aranego, 2020); it promotes motivation by creating an engaging learning environment that supports the development of skills and creativity (Tarmizi, 2021); and it facilitates feedback to the learner, who improves in the clarity of their speech (Ngoc, 2020).

According to Tan, K. H., et.al. (2020), videos can be not only a tool for practice, but also for assessment, so they can be considered as valid evidence of communicative competence achievement.

Castro-Quezada, et.al. (2020) point out the importance of learning through the use of images, computers, programmes and new technologies, as such applications are transcendental educational tools nowadays.

Rodriguez Medina, et.al (2023) analysed the perceptions of Mexican teachers regarding the use of Tiktok in language learning, and concluded that 54 % of them use the networks for language teaching, however, they also identified that there is a need to train teachers in the use of this emerging technology. In Mexico, the effects of TikTok as a pedagogical tool for English language learning have not been fully explored.

Among the advantages of using TikTok as an educational tool, the following are found to exist:

- a. Attention: By having a maximum time duration of 60 seconds, it allows you to keep your attention on the video.
- b. Variety of communicative elements that can be incorporated, for example, handling voice, images, videos, text, animations and music, which allows for greater creativity in the content.
- c. Community connection: It is a platform that connects people of different ages, cultures and interests.
- d. Constant updating for and by the needs of the user.
- e. Loop: It allows the user to watch the video as many times as necessary, until the user decides to change it.

The purpose of this study is to explore the use of the TikTok application in a sample of university students as a language learning tool to improve fluency in communication, grammatical skills, and 21st century skills such as communication, creativity, critical thinking and collaboration.

## 2. Methodology

### Method

The study is a qualitative exploratory study, for which videos were created with seven types of assignments for learners for specific purposes in accordance with the English subject syllabus, where cultural investigations, personalised vocabulary discourses, grammar-focused discussions, role-play conversations, oral reading reports, listening comprehension and grammar explanations were reviewed and analysed.

The videos were then uploaded to the TikTok platform, and students interacted by commenting on each other's products and using them for revision over a four-month period. (Table 1 and Appendix 1).

Types of learning activities in TikTok within the English programme
1. Cultural research – Sayings – Jokes
2. Personalisation of vocabulary in a short individual speech. – How fear affects you physically – Ways in which you deal with anger – Ways to prevent travel problems
3. Personalisation of grammar in an individual communicative discourse within a learner gateway – No matter clauses to express frustration. – Unreal conditional sentences: Continuous forms. Use of flashcards and collaborative pair work. – Indirect discourse, It + Verbs to report in passive voice to talk about superstitions. – Subjunctive to express that it is urgent, advisable or obligatory for someone to do something. – Unreal passive conditional sentences, in present and past tense to evaluate the application of innovative technologies.
4. Conversaciones en juego de roles – Como superar nuestras deficiencias. Vocabulario y cláusulas adverbiales de condición con <i>Otherwise</i> . – Como darse por enterado de nuestro comportamiento desconsiderado. Expresiones sociales, y <i>Cleft sentences</i> tipo <i>What really bothered me was...</i> – Cómo responder a una broma. Vocabulario.
5. Reading report – What are the qualities of friendship?
6. Listening comprehension report – Description of a practical joke from the chief of medicine to a young doctor in a hospital for mental illness.
7. Grammar explanation on slides by the teacher. Indirect Speech: Reporting verbs in passive voice. – Idiomatic expressions and social expressions: Use of technology. – Unreal conditional sentences in passive voice

**Table 1** Types of learning activities in TikTok in the English language programme  
*Own Elaboration*

**Participants**

The study was carried out in two class groups, with a sample of 50 university students, aged between 18 and 24, 26% of whom were female and 74% male, 96% of whom were in their fifth term and 4% in their third term of the university degree programme, with an intermediate English level of B2+ according to the Common European Framework of Reference for Languages (CEFR).

**Focus group**

A guide of questions was developed to gain an in-depth understanding of the opinions, experiences, beliefs or perceptions of the use of TikTok as an English language learning strategy through two focus groups (Table 2). Participants in each group were randomly selected.

Questionnaire for the focus group: TikTok as an English teaching strategy
Objective: The objective of this focus group is to recognise whether the use of TikTok as a learning strategy supported the development of your English language and communication skills.
Instructions: The facilitator will read out the questions one by one. Participants will be able to answer the question(s) of their choice. At the end of the audio recording, participants will write a conclusion on the back of this sheet.
1. In class we made use of TikTok by recording videos with different strategies: reporting on reading, reporting on listening comprehension of a story, conversing in a role play, making short speeches in a student walkway on the class topic using new grammar or vocabulary or cultural investigations. Compared to the approaches of other English classes, what did you like and dislike about using TikTok to learn English?
2. Recording constantly in English in the short TikTok format on the themes of the course, was it a motivating challenge, or a terrifying challenge? Why?
3. The 21st century skills are communication, collaboration, creativity and critical thinking. In the process of preparing for your participation in TikTok, did you exercise any of these skills? In what ways?
4. Do you think that having incorporated lessons whose productive evidence was videos on a social and public platform contributed to an improvement in your processing of new vocabulary and grammar? Yes or no In what way?
5. In your experience as an English learner, what is the difference between using or not using TikTok in your learning?
6. Should you use or not use TikTok to learn English and why?
7. What suggestions do you have for improving your learning experience using TikTok?

**Table 2** Questionnaire for the focus group: TikTok as an English teaching strategy (*Prepared by the teacher*)

Since this study was carried out on two class groups, two focus groups were conducted, with a total of 11 participants, in order to find out their perception of the work done. In order to carry out the data analysis, the focus group participants and their responses were coded (Table 3).

Participant and focus group (coding)	Gender	Grade level
Participant 1, focus group 1 (P1)	Women	5th term
Participant 2, focus group 1 (P2)	Man	5th term
Participant 3, focus group 1 (P3)	Women	5th term
Participant 4, focus group 1 (P4)	Man	5th term
Participant 5, focus group 1 (P5)	Man	5th term
Participant 6, focus group 1 (P6)	Man	5th term
Participant 7, focus group 2 (P7)	Man	5th term
Participant 8, focus group 2 (P8)	Man	5th term
Participant 9, focus group 2 (P9)	Man	5th term
Participant 10, focus group 2 (P10)	Man	5th term
Participant 11, focus group 2 (P11)	Man	5th term

**Table 3** Integration and coding of the focus group participant sample  
*Own Elaboration*

The responses of the focus group participants were transcribed and coded into relevant units of meaning that revealed literal examples of their experiences and perceptions. In this coding process, keywords, phrases and sentences were analysed to establish categories of interpretation.

**Instruments**

At the conclusion of the course intervention, the Student Appreciation Questionnaire was administered at the end of the intervention, which was designed for the purposes of the present research and consists of ten questions, seven dichotomous, with yes or no answers; two of the questions are multiple choice, and one question is open-ended (Table 4). (Table 4).

Student appreciation questionnaire on the use of TikTok as an English learning strategy
1. Does your participation in TikTok reporting your research on sayings and jokes seem to you to be evidence that you have learned about the culture of the language you are learning? a) Yes b) No
2. Does participation in a short speech on TikTok provide valid evidence that you are using the grammar and vocabulary from the lesson to communicate your ideas? a) Yes b) No
3. Does engaging in conversations such as the psychiatrist and the patient, or how to respond to a joke, seem to you to be evidence of interaction in a communicative act? a) Yes b) No
4. Does the reading report "qualities of friendship", explaining the qualities you value in a friend, seem to you to be evidence that you understood the reading, because you use its content to talk about what you think? a) Yes b) No

5. Does the report in listening comprehension teams on the practical joke of the head doctor to another doctor in a psychiatric hospital seem to you to be evidence that you understood the audio of the conversation? a) Yes b) No
6. Watching the videos of your own and your classmates' participation, do you find it useful for revision? a) Yes b) No
7. Interacting with the TikTok videos of your class or the teacher, commenting in English, does it help you to revise faster than if you were doing it on your own? a) Yes b) No
8. Exposing yourself on the TikTok platform by speaking English, does _____. a) It pushes you to do better than if you didn't expose yourself, because you have to take care of your accent and avoid mistakes. b) It makes you popular and that motivates you c) It distresses and saddens you as you are not sure of your performance. d) It seems incompatible with you as you value your privacy on the networks.
9. Use this space to comment on your experience using TikTok as a strategy for building your English language learning in a social and public way.
10. How often do you recommend including TIKTOK as a learning strategy and/or evidence of performance in future English courses? a) In every lesson b) In two lessons per unit c) Once per unit d) Never

**Table 4** Student appreciation questionnaire on the use of TikTok as an English learning strategy  
*Own Elaboration*

**3. Results**

**Student appreciation questionnaire**

The results of the student appreciation questionnaire on the use of TikTok as an English learning strategy indicate that 100% of the participants consider their reports of cultural research on sayings and jokes to be evidence that they have learned about the culture associated with English. 98% consider their TikTok participations to be evidence that in their short speeches they correctly use the grammar and vocabulary from the lessons to communicate their ideas. 90% find that the role-plays on the topics addressed are evidence of their efficient interaction in a communicative act. 94% believe that the individual oral report on a reading is evidence that they understood the topic of the written text; and 90% consider that the oral report in teams on a story described in audio is evidence that they understood it in detail.

In addition, 84% identify that watching videos recorded by the class helps them to revise; while 86% say that interacting with the class videos helps them to revise faster than if they did it alone using their notebook.

On the other hand, 58% of the participants think that being exposed to the TikTok platform by speaking English helps them to do better than if they did not do it, since they have to take care of their accent and not make mistakes; however, 20% feel anxious and sad because they are not sure of their performance, and 22% find it incompatible because of privacy issues.

Regarding the frequency with which the participants suggest using TikTok as a learning strategy and/or evidence of performance, 58% indicate that in two lessons per unit, while 26% mention that it should be in every class and 16% once per unit.

Responses to the open-ended question about their experience using TikTok as a strategy for constructing their English language learning in a social and public way were ranked. The ranking was based on the subject matter of the comments. Table 5 summarises 13 of the benefits according to the comments made in the open-ended questionnaire questionnaire applied to the sample (N=50).

	Interesting and dynamic Innovative idea, which invites students to participate and review their mistakes: it even feels fun to participate. I watch the videos, and it gives me gratification to see how I am improving my speaking skills.
Improve pronunciation	Improved pronunciation Helps me to improve my pronunciation and speak English more fluently Motivates you to do a good pronunciation
Works with thinking skills	Improved structuring of ideas
They suggest incorporating it into your learning strategies briefcase.	I would like to apply it from now on, in future classes. Very good strategy
Self-assessment and self-editing of discourse	It helps to locate our areas of opportunity in order to work on them more efficiently. I can see how I express myself and what I can improve. It is very useful to see them again and realise their mistakes.
Spoken English practice aid	English should be practised, not just studied in a mechanical way. It helped me to understand aurally
Support when the pupil does not attend class	When I don't attend, it allows me to review what I missed in class.
Promotes social interaction	We complement each other's knowledge to enrich the language. By making it interactive it becomes more interesting I can apply my English skills there to improve and get an audience to help me improve in the language.
Accommodates different forms of participation	Learning by seeing and hearing the examples I liked the way it was implemented, through some participation in videos, some in comments and some just as an observer.
Productive practice	Creative way to be able to put into practice what I learnt in theory. Improved my grammar It forces you to practice
As a review	Simple, short videos that I can remember and memorise

Supporting factor for learning English	Quote
Form and technological accessibility	Easy accessibility and helps us to save or find videos easily. With short videos it appeals to the mind Everyone has access It takes advantage of current technologies to support knowledge. I like the format Practical because of the relative ease of access Quite useful
Improve confidence in speaking	Helps to give us confidence in speaking out Increased my confidence and security Overcome some nerves Confidence in public speaking Pushes me to do better because of the exposure to the public Lose fear of speaking
Motivation and achievement gratification	Breaks the routine of ordinary classes Pushes us out of our comfort zone

**Table 5** Student comments on their experience using TikTok as a strategy for constructing their English language learning in a social and public way *Own Elaboration*

## Focus group

The data obtained through the focus group shows four dimensions why incorporating videos on TikTok within the subject syllabus is beneficial for English language learning: Appearing in the videos is a motivating challenge, it is a new way of learning using technology, it promotes self-correction by allowing self-observation, and it enhances 21st century skills. Suggestions for improving the learning experience using the platform were also obtained.

## The following are the contributions of the participants:

### 1. Motivational challenge

Appearing in public videos proved to be a motivational trigger for participants who have not been exposed to speaking in a foreign language in front of large audiences, as it reduces the fear of coming face to face with an interlocutor. Speaking into the camera may seem like a scary challenge, however, it produced firstly, participants stepping out of their comfort zone, and then, gaining the confidence to speak in English. An example of this is mentioned in the following paragraphs of testimonials:

*"It was a motivating challenge because it allowed me to open up a bit more to be able to interact, to express myself by recording myself in TikTok. I don't see it as a scary challenge, it's more like opening doors and you can make mistakes and do it again to improve. And when you see that TikTok, you can see it in a more correct way, in my opinion it is very good and if it is a good motivating challenge". (P6)*

*"I think it was both partly a scary challenge, because it's like having an audience watching us, but at the same time motivating that allows us to bring out those skills, mainly to the public at a time, especially with a language in which we are not fully familiar and I think it is a middle ground, but the balance tipping a little to be a more motivating challenge". (P4)*

- a. Some participants lost their fear of speaking in English, and gained confidence to speak in public without feeling nervous about being in front of an audience.

*"At the time of doing a TikTok I thought I was going to be exposed socially, so that made me try harder to make sure the vocabulary and grammar was used correctly. I really enjoyed using the TikTok app as it made me get out of my comfort zone and lose a bit of fear and have a bit more confidence in myself, when speaking in English." (P3)*

*"What I liked about using the TikTok platform was that it became like an intermediary for me to speak in public in front of many people, but without having those people in front of me and that gave me more incentive to improve my vocabulary, without feeling nervous about being judged by those people. I think we do need to use TikTok to learn English because it is a tool that helps us to get out of our comfort zone so we can try harder to do our best when we try to speak English. (P5)*

- b. In addition to getting out of their comfort zone, this strategy makes the class not as "dramatic as the others". (Sic)

*"I think yes, we should use TikTok more in English classes, as it is a very dynamic and fun way, plus it helps us to get out of our comfort zone, it allows us to be more confident when expressing ourselves and it is not as dramatic a class as the others." (P3)*

### 2. New way of learning

One aspect highlighted by the data obtained was that the participants consider the TikTok assignments as a dynamic, different, creative, and practical way of learning using technology; where in addition to their own learning, they feel that they are supporting others to learn and revise with them. In this regard, Macías Rodríguez (2023) points out that in the contents that are carried out through the socio-digital network, peer groups also function as role models or behavioural references.

- c. It is possible, then, that in the case of English educational videos, these models can serve to learn from the learner who plays a closer role model.

*"I think we should use ICT to learn English. I think that, like anything, we should look for new ways to learn and I think that TikTok is a different and very creative way to learn and being a platform that many people use, it would be important to use it, because it would be beneficial if they can see, for example, the TikToks that we do in class, and maybe if they don't understand a topic in their classes, by seeing the TikToks that we do, it can be made easier for them." (P1)*

*"Of course you have to use TikTok, I think it is part of our technological advances and other ways of learning, since it allows us to familiarise ourselves and try to learn English in another way, since we are not only going to keep what we have learned, but we are also going to be able to support other people who want to learn English, for example, some phrases that they do not know they will know them while we can interpret them in TikTok". (P6).*

- d. Other participants pointed out that the strategy brings dynamism to the class.

*"I think that if TikTok is also focused on recording short videos of some explanation, such as tips, in a matter of seconds or minutes, I think it would have a high impact on learning". (P2)*

- e. They also point out the creative, less boring and more memorable character.

*"The difference between using and not using TikTok is that, for example, when learning only in class by doing work in the notebook, it is like a very square way of learning and maybe it is not so creative and in my experience it is more boring. And in the case of using this platform, it is more practical and, for example, we can go back and watch these videos and remember what we saw and how we can express ourselves about the topic we have seen. By being more creative we can remember it better". (P1)*

*"At the beginning it was a scary challenge, but with constant review it became more relaxed and fun". (P9)*

- f. Participants highlight their genuine character.

*"In order to improve our experience, I think we should keep calm and even as if we were going to present with a very large audience in a conference room look to summarise, and even use creativity so that everything we say and do is noticed in a more fluent, more genuine way." (P6)*

*"To be able to pronounce correctly all the grammar we see in class and not only understand it, but put it into practice." (P10)*

- g. They also underline that this type of practice focuses on meeting their developmental needs in English.

*"The difference between using or not using TikTok is that working in the notebook is very monotonous, and with TikTok, learning is more dynamic, more creative, more flexible because it helps you to express yourself and that is what most of us need, to be able to express ourselves and to be able to speak. Interacting with other people. (P6)*

- h. The short format makes it easier to review.

*"Regardless of the fact of recording videos and the benefits of doing so, the fact that it is recorded and you can perhaps review it at home before an exam, and review it briefly instead of reviewing the exercises you did in the notebook". (P2)*

*"One of the differences between using TikTok and not using TikTok is that we can review what we said in some practice, which when we didn't have TikTok we just wrote it down and memorised it on the spot, but then we forget it. With TikTok they stay saved on the platform and we can constantly review that or different videos of our classmates." (P9)*

*"It's a very simple platform. You can save the videos, watch them again and review them". (P7)*

### 3. Self-observation for self-correction, mirror practice

Through the review of the videos before their publication, the participants made a more graphic observation that allowed them to self-correct grammatical, vocabulary and pronunciation mistakes; which led them to a place rarely visited before: their mirror of self-evaluation and self-correction.

*"I consider that the videos did help me because before being recorded, I tried to express what I was going to say in a low voice to practice it, and after being recorded I watched those TikToks, and I noticed some mistakes that I could subsequently modify to be a better speaker." (P5)*

*"Recording videos on TikTok does contribute to an improvement. It allowed me to have a better diction when expressing myself in front of the camera, so that other people can understand me, and so I can break patterns that have not allowed me to express myself correctly before. It contributes in a positive way. (P6)*

*"There is a lot of difference between using and not using TikTok, mainly because we are with an audience practically; but the big advantage is that we can see where we are going wrong.. Maybe what things we can improve, and what things we can only polish. And compared to expressing it only to the group, we have the possibility to see our mistakes in a more graphic way, so trying to improve is easier". (P4)*

### 4. Skills for the 21st century

In the process of preparing the communicative acts in the videos, participants indicated that they exercised four 21st century skills: communicating in a foreign language based on the lesson assignment, collaborating face-to-face and online with their peers, finding the creativity needed to personalise their speech, and finally, thinking critically to determine the level of satisfaction with the final product.

a. Particularly in the skill of communication in a foreign language, watching oneself on video improves expressiveness, develops awareness of tone of voice, gestures and body language, as indicated by the following participants:

*"I consider that having produced the videos helps us to develop a character, as we are more used to just watching the videos and do not understand the real expressiveness of the English speaker. I have been able to understand more without reading subtitles by understanding the emotions in context. That's what I mean by character development. It opens us up more to the expressiveness of how to say it. You can notice the intonation we use to show whether we are angry, happy or sad, even in our body language and our face." (P8)*

b. It also supports collaboration, creativity and critical thinking:

*"I think they did exercise all four 21st century skills. Communication when making these videos, because we are trying to communicate something regardless of the language. Collaboration too, to agree on what we are going to say and what we are going to do. Creativity to find the best way to do it; and critical thinking to know what to say, not only to let go, but also to know what we are going to say, how we are going to say it, and at what moment. (P4)" (P4)"*

*"I think that what we work on most would be creativity and communication, because at the moment of gesturing for a correct pronunciation, communication is practised. Creativity when putting together your sentence or a conversation with a classmate, as well as collaboration. (P2)"*

*"We exercise all 3 skills. For example, communication by recording a TikTok teaches us to express ourselves, to start a conversation. Just like creativity, to record a TikTok you have to be creative. In the case of making a conversation we also exercise collaboration, since we have to agree with our classmates and participate together so that the communication is enjoyable and, even more so if it is in another language, so that the topic we have seen in class is visualised. (P1)".*

*"I used critical thinking and creativity when looking at a topic and deciding how to put some words together to get the message across (P11)."*

## 5. Suggestions for improving the experience

Participants made some suggestions to improve the level of satisfaction during the learning experiences using TikTok.

- a. It was suggested that they should be given the freedom to keep the mouth cover during the video as they do not like to show their face. An alternative for learners in a similar case is to use the video effects offered by the app.

*"What I didn't like was taking my mouth cover off. I just don't normally like having my face shown and having to take my mouth cover off to be in the frame." (P5)*

- b. Use of creative effects.

*"To improve our experience using TikTok, it is important that the TikToks are more creative, maybe use a background when recording or use characters or when engaging in a conversation, that each person has a certain costume to draw our attention more (P1)".*

- c. Addressing topics that catch their attention. It is feasible, if the level of motivation is high within the group, to give them the freedom to develop a current topic of their choice.

*"Also talk about topics that are interesting, that catch our attention more and people that motivate us to stay watching TikTok to learn." (P1)*

## 4. Funding

This work has been financed with resources from the Universidad Tecnológica de León.

## 5. Conclusions

The use of TikTok as a learning tool in the educational context has proven to be beneficial for students for several reasons:

- Short videos on this platform improve oral communication, as they develop awareness of your own expressiveness, body language, gestures and tone of voice.

- Develops confidence to speak in a foreign language to potentially large audiences.
- Increases retention by encouraging meaningful learning, expands vocabulary from the need to personalise speech, increases motivation by maintaining the self-image each learner is creating as a foreign language speaker.
- Promotes an engaging social learning environment by opening up the possibility of interactions beyond the classroom; whether by making a video, commenting on it, or just watching it.
- Improves speech clarity, fluency and grammar in English language learning by providing a mirror for the learner to observe, self-assess and self-correct.

TikTok videos can also be considered valid evidence of the achievement of communicative competence in language learning. This implies that videos are not only a tool for practice, but also for assessment. They can even serve as a portfolio of evidence of group and individual learner learning. The process of producing the videos with the specific assignments corresponding to the syllabus promoted not only English language learning, but also developed 21st century competences such as communication, collaboration, creativity and critical thinking.

The results of the student appreciation questionnaire indicate that the participants perceive the use of TikTok as a learning strategy positively. They consider their TikTok participations as evidence that they have learned about the culture of the language, use grammar and vocabulary correctly, interact in communicative acts, understand readings and audios, and find benefits in reviewing and interacting with the videos.

Assignments on TikTok were described as a dynamic, different, creative, and practical way of genuinely learning using technology; where in addition to their own learning, learners are role models who are supporting others to learn and revise with them. It is possible, then, that in the case of English language learning videos, such models can serve to learn from the learner who plays a closer role to follow.



The English learner moves towards a more self-directed self-development, as TikTok increases their criticality, allowing them to self-assess and self-correct. In this way, their learning also becomes more self-directed.

For future experiences using TikTok, the use of visual and creative effects is suggested to enhance the learning experience and information retention.

In conclusion, this preliminary study shows that the use of TikTok as a language learning tool can have a positive impact on the development of learners' language and communication skills. However, more research and training is needed to fully exploit the potential of this platform in the Mexican educational context.

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## Annexes

Links to the videos made during the study:

1. Cultural Research - Unit 2.

Unit 2. Sayings

[https://www.tiktok.com/@anagracielasalazarrosas/video/7193055818990882054?is\\_from\\_webapp=1&sender\\_device=pc&web\\_id=7169657200805627398](https://www.tiktok.com/@anagracielasalazarrosas/video/7193055818990882054?is_from_webapp=1&sender_device=pc&web_id=7169657200805627398)

[https://www.tiktok.com/@anagracielasalazarrosas/video/7193073350137203974?is\\_from\\_webapp=1&sender\\_device=pc&web\\_id=7169657200805627398](https://www.tiktok.com/@anagracielasalazarrosas/video/7193073350137203974?is_from_webapp=1&sender_device=pc&web_id=7169657200805627398)

[https://www.tiktok.com/@anagracielasalazarrosas/video/7193074363799735557?is\\_from\\_webapp=1&sender\\_device=pc&web\\_id=7169657200805627398](https://www.tiktok.com/@anagracielasalazarrosas/video/7193074363799735557?is_from_webapp=1&sender_device=pc&web_id=7169657200805627398)

#### Unit 5. Jokes

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#### 2. Personalization of vocabulary in a short individual speech- 3.

##### Unit 3. How fear affects you physically

[https://www.tiktok.com/@anagracielasalazarrosas/video/7195579799220292870?is\\_from\\_webapp=1&sender\\_device=pc&web\\_id=7169657200805627398](https://www.tiktok.com/@anagracielasalazarrosas/video/7195579799220292870?is_from_webapp=1&sender_device=pc&web_id=7169657200805627398)

##### Unit 4. Ways you deal with anger

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##### Unit 6. Ways to prevent travel problems

[https://www.tiktok.com/@anagracielasalazarrosas/video/7207593935315766534?is\\_from\\_webapp=1&sender\\_device=pc&web\\_id=7169657200805627398](https://www.tiktok.com/@anagracielasalazarrosas/video/7207593935315766534?is_from_webapp=1&sender_device=pc&web_id=7169657200805627398)

#### 3. Personalization of grammar in an individual communicative discourse within a learner gateway -.

##### Unit 3. Clauses with "No matter" to express frustration.

[https://www.tiktok.com/@anagracielasalazarrosas/video/7194953667018034438?is\\_from\\_webapp=1&sender\\_device=pc&web\\_id=7169657200805627398](https://www.tiktok.com/@anagracielasalazarrosas/video/7194953667018034438?is_from_webapp=1&sender_device=pc&web_id=7169657200805627398)

Unidad 6. Oraciones condicionales irreales: Formas continuas. Uso de flashcards y trabajo colaborativo en parejas

[https://www.tiktok.com/@anagracielasalazarrosas/video/7208257350149459205?is\\_from\\_webapp=1&sender\\_device=pc&web\\_id=7169657200805627398](https://www.tiktok.com/@anagracielasalazarrosas/video/7208257350149459205?is_from_webapp=1&sender_device=pc&web_id=7169657200805627398)

Unit 7. Indirect discourse, it+ Verbs to report in passive voice to talk about superstitions.

[https://www.tiktok.com/@anagracielasalazarrosas/video/7213472826509004037?is\\_from\\_webapp=1&sender\\_device=pc&web\\_id=7169657200805627398](https://www.tiktok.com/@anagracielasalazarrosas/video/7213472826509004037?is_from_webapp=1&sender_device=pc&web_id=7169657200805627398)

Unit 8. The subjunctive to express that it is urgent, advisable or obligatory for someone to do something.

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Unit 9. Unrealistic passive, present and past conditional sentences to evaluate the application of innovative technologies.

[https://www.tiktok.com/@anagracielasalazarrosas/video/7221617249000410373?is\\_from\\_webapp=1&sender\\_device=pc&web\\_id=7169657200805627398](https://www.tiktok.com/@anagracielasalazarrosas/video/7221617249000410373?is_from_webapp=1&sender_device=pc&web_id=7169657200805627398)

#### 4. Role-play conversations.

Unit 4. How to overcome limitations=Vocabulary and grammar (shortcomings and otherwise).

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Unit 4. How to take notice of our inconsiderate behavior. (Acknowledge inconsiderate behaviour (expresiones sociales, y gramática= What really bothered me was...)

[https://www.tiktok.com/@anagracielasalazarrosas/video/7203015371740187909?is\\_from\\_webapp=1&sender\\_device=pc&web\\_id=7169657200805627398](https://www.tiktok.com/@anagracielasalazarrosas/video/7203015371740187909?is_from_webapp=1&sender_device=pc&web_id=7169657200805627398)

##### Unit 5. How to respond to a joke=(vocabulary)

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#### 5. Reading report

Unit 4. What are the qualities of friendship.

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<p><a href="https://www.tiktok.com/@anagracielasalazarrosas/video/7204915299445918982?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398">https://www.tiktok.com/@anagracielasalazarrosas/video/7204915299445918982?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398</a></p>
<p>6. Listening comprehension report. Unit 5. Description of a practical joke from the chief of medicine to a young doctor in a hospital for mental illness.</p>
<p><a href="https://www.tiktok.com/@anagracielasalazarrosas/video/720603599015718150?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398">https://www.tiktok.com/@anagracielasalazarrosas/video/720603599015718150?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398</a></p>
<p><a href="https://www.tiktok.com/@anagracielasalazarrosas/video/7206036519939788038?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398">https://www.tiktok.com/@anagracielasalazarrosas/video/7206036519939788038?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398</a></p>
<p><a href="https://www.tiktok.com/@anagracielasalazarrosas/video/7206037143062465797?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398">https://www.tiktok.com/@anagracielasalazarrosas/video/7206037143062465797?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398</a></p>
<p><a href="https://www.tiktok.com/@anagracielasalazarrosas/video/7206037811248647429?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398">https://www.tiktok.com/@anagracielasalazarrosas/video/7206037811248647429?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398</a></p>
<p>7. Grammar explanation on slides by the teacher. Unit 7. Indirect Speech: Verbs to report in passive voice.</p>
<p><a href="https://www.tiktok.com/@anagracielasalazarrosas/video/7213514361342659845?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398">https://www.tiktok.com/@anagracielasalazarrosas/video/7213514361342659845?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398</a></p>
<p>Unit 9. Idiomatic expressions and social expressions: Use of technology.</p>
<p><a href="https://www.tiktok.com/@anagracielasalazarrosas/video/7216383633014230277?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398">https://www.tiktok.com/@anagracielasalazarrosas/video/7216383633014230277?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398</a></p>
<p>Unit 9. Unreal conditional sentences in passive voice.</p>
<p><a href="https://www.tiktok.com/@anagracielasalazarrosas/video/7221997260631051525?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398">https://www.tiktok.com/@anagracielasalazarrosas/video/7221997260631051525?is_from_webapp=1&amp;sender_device=pc&amp;web_id=7169657200805627398</a></p>

**Annex 1** Links to videos of the learning activities in TikTok within the English program (Own Elaboration)

# Instructions for Scientific, Technological and Innovation Publication

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Methodology  
Contribution

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\* Correspondence to Author (example@example.org)

† Researcher contributing as first author.

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General explanation of the subject and explain why it is important.

What is your added value with respect to other techniques?

Clearly focus each of its features

Clearly explain the problem to be solved and the central hypothesis.

Explanation of sections Article.

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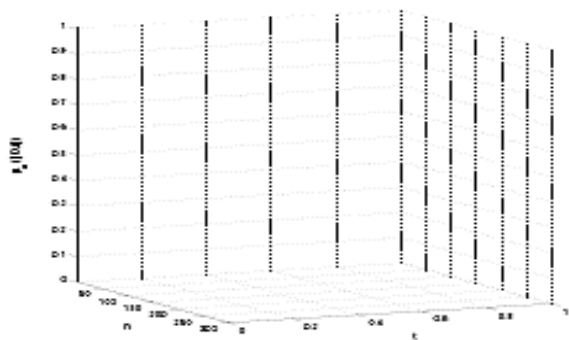
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## Including graphs, figures and tables-Editable

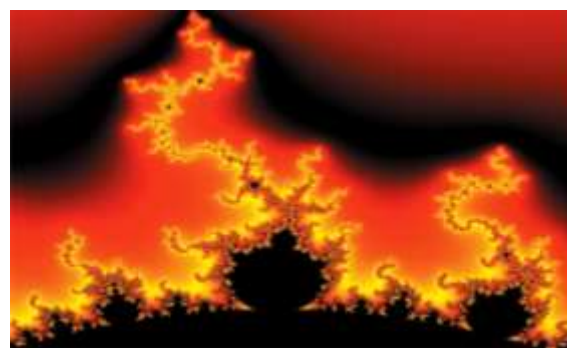
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## Annexes

Tables and adequate sources

## Thanks

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## Conclusions

Explain clearly the results and possibilities of improvement.

# Instructions for Scientific, Technological and Innovation Publication

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