ISSN 2523-0336

Volume 5, Issue 14 – July – December – 2021

Journal High School

ECORFAN®

Journal High School, Volume 5, Number 14, December - 2021, is a semi-annual Journal edited by ECORFAN-Republic of Peru. Av. La Raza, No.1047 - Santa Ana, Cusco-Peru, CP: 11500
http://www.ecorfan.org/republicofperu/rj_educacion_superior.php, revista@ecorfan.org. Editor in Chief: Ramos Escamilla-María, Co-editor: Gabriel Suyo Cruz. ISSN: 2523-0336. Responsible for the last update of this issue ECORFAN Computer Unit. Imelda Escamilla Bouchán, PhD. Vladimir Luna Soto, PhD. Updated as of December 31, 2021.

Journal High School

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Knowledge Area

The works must be unpublished and refer to topics of Higher education curricular standards, higher education training fields, higher education curricular frameworks, higher education curricular parameters and other topics related to Humanities and Behavioral Sciences..

Presentation of Content

In the first article we present *Comparative study of learning styles of college students*, by CEPEDA-GONZALEZ, María Cristina, VILLARREAL-SOTO, Blanca Margarita, SÁNCHEZ-RIVERA Lilia and LUNA-ESPERICUETA, Samantha Sarahí, with assignment at the Universidad Autónoma de Coahuila, as a second article we present *Study and work in times of pandemic, how do university students solve technological-digital situations?*, by YAÑEZ-FLORES, Sara Margarita, SALINAS-AGUIRRE, María del Consuelo, HERNÁNDEZ-CUETO, Jaquelina Lizet and GUAJARDO-GÓMEZ, Ana Daniela, with adscription in the Universidad Autónoma de Coahuila, as third article we present Integration of Four Basic Functions of Education in the Arts Unit of the Universidad Autónoma de Zacatecas, by CAIGNET-LIMA, Solanye, CHÁVEZ-ACUÑA, Samuel Caleb and BAUTISTA-ACOSTA, Edgar Enoch, with adscription at the Universidad Autonoma de Zacatecas, as fourth article we present *Music education at the infant level through educational technology*, by RODRÍGUEZ-JUAN, Arién & OSA-RICARDO, Arlena, with adscription in the Universidad Autónoma de Zacatecas and Escuela Elemental de Música Alejandro García Caturla.

Content

Article **Journal High School**
December 2021, Vol.5 No.14 1-9

Comparative study of learning styles of college students

Estudio comparativo de los estilos de aprendizaje del estudiante universitario

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DOI: 10.35429/JHS.2021.14.5.1.9 Received July 10, 2021; Accepted December 30, 2021

Abstract

The research approach of this article was to observe which were the main differences of opinions between the groups and their learning styles, the methodology used was quantitative, observational, descriptive and comparative. A standardized ILP-R instrument was used, evaluates four complementary dimensions related to learning styles and processes in academic study that we will comment on later: (Deep Processing, Methodical Study, Retention of Facts and Elaborative Processing).with a sample of 1412 university students; the statistical analyzes that were carried out were descriptive and comparative. The main conclusion of the study is that students with an average of 90 percent develop an interest in continuing to learn and discover not only academically but personally, they are more expressive to people, they tend to make minimum mistakes because they have confidence in everything they do, Likewise, if the student works while studies , that provides an ability to relate to others, but dedicating solely to study allows more space to enjoy daily learning and full dedication to academic growth.

Comparative, Styles, Learning

Resumen

El planteamiento de la investigación del presente artículo fue observar cuales fueron las principales diferencias de opinión entre los grupos y sus estilos de aprendizaje, la metodología que se utilizo fue cuantitativa, observacional, descriptiva y comparativa. Se utilizo un instrumento estandarizado ILP-R, instrumento que evalúa cuatro dimensiones complementarias relativas a los estilos y procesos de aprendizaje en el estudio académico que comentaremos posteriormente: (Procesamiento Profundo, Estudio Metódico, Retención de Hechos y Procesamiento Elaborativo). Con una muestra de 1412 estudiantes universitarios; los análisis estadísticos que se llevaron a cabo fueron el descriptivo y comparativo. La principal conclusión del estudio es que los estudiantes con un promedio de 90 desarrollan interés por seguir aprendiendo y descubriendo no solo académicamente si no personalmente, se muestran más expresivos a la gente, tienden un mínimo a equivocarse pues tienen confianza en todo lo que hacen, así mismo referente a que sí el estudiante trabajo mientras se está estudiando brinda una capacidad de relacionarse con los otros, pero el dedicarse únicamente al estudio permite mayor espacio a disfrutar del aprendizaje diario y a la dedicación plena del crecimiento académico.

Comparativo, Estilos, Aprendizaje

Citation: CEPEDA-GONZÁLEZ, María Cristina, VILLARREAL-SOTO, Blanca Margarita, SÁNCHEZ-RIVERA, Lilia and LUNA-ESPERICUETA, Samantha Sarahí. Comparative study of learning styles of college students. Journal High School. 2021. 5-14:1-9.

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Introduction

Learning styles have become a very recurring and important theme throughout the history of human development, especially when we talk about education. These styles have accompanied each person on their educational path, from childhood to even old age, the antecedents generally define learning styles as traits that identify each subject in their process of understanding new knowledge. Recent research talks about the importance of studying learning styles since it is a way of understanding and understanding the student, this allows adapting techniques, methods or guiding them to achieve knowledge

In general, learning styles should provide and be the area of opportunity to strengthen the academic performance of students, especially when talking about higher education, since guidance is necessary to achieve significant results. This also allows us to see a diversity of styles that education encompasses, how people have their own qualities and aptitudes, which may have similarities, but differences such as the execution of these.

This research was done from the learning styles axis and its dimensions such as self-affirmation, elaborative processing and random response scale that make up the Schmeck instrument, this standardized questionnaire was applied to higher level students. The present work has the purpose of generating even greater interest in the study of learning styles and their variants for application within the classroom and that contributes to personal and academic development.

The relevance of this research lies in the integration of learning styles with all the dimensions covered according to Schmeck and their application in today's everyday life. In our reality, education is being around the student and their needs, their concerns, how they learn, their skills, their attitudes and skills.

For this reason, from this work, university students will benefit, as well as teachers themselves, since they will be given tools to make the acquisition of learning a natural and effective act within the classroom and outside of the classroom. allowing optimal school development to achieve academic improvement, likewise the achievement of a healthy and peaceful coexistence within school institutions.

Its theoretical value is based on the research that lies in the integration of theories that explain about the phenomenon of study to provide a foundation. The methodological value consists of the application of a standardized ILP-R instrument (Shmeck), this being an instrument that evaluates four complementary dimensions related to learning styles and processes in academic study that we will comment later: (Deep Processing, Methodical Study, Retention of Facts and Elaborative Processing). for its application and data collection. The viability of this project lies in access to the population for data collection, likewise within the theory there is an extensive and wide range of authors and articles that support the research.

The research approach is: -What are the main differences and opinion between the groups and their learning styles

With the following specific objectives:

- What are the differences of opinion between men and women regarding self-assertion, Elaborative Processing, and Random Responses.
- What are the differences of opinion of the population that has an average of 90 and 80 regarding self-assertion.
- What are the differences of opinion of the working population and the non-working population regarding elaborative thinking.
- What are the differences of opinion of the population that worked previously and those that did not regarding self-assertion.
- What are the differences of opinion of the population that studies the degrees in Educational Sciences and Psychology regarding the scale of random responses.

ISSN-2523-0336

Learning styles

With regard to the research carried out by (Ramos Rodriguez, Rios, & Gariboto, 2019), which has a quasi-experimental quantitative cut with a sample of master's and doctoral students in two different groups, the first one corresponding to participants in the Computer Tools for Research course, in the group two students from the Educational Platforms course. The results are taken that show that the learning states in addition to how the subjects learn, these are determined by biological relationships that can refer to the age, the development of the person and their physiological condition. Another remarkable result is that there are cognitive and personal relationships such as emotional states, the immersion environment that serve as an indicator to identify the predominance of a particular style, that is, the strategies that individuals assume to receive, organize and process information.

Abel Pérez, Cristian Méndez, Pedro Pérez and Héctor Yris in (2019), in the research article "Learning styles as a strategy for teaching in higher education" which has a mixed design (qualitative and quantitative) and a sample of 33 people, published in the Learning Styles Magazine, in this article we find that: Exploring learning styles will allow us to know how a student learns, which can serve as a starting point towards contextualized planning of activities. so as not to design teaching activities focused solely on the interest and style of the teacher. Not all teaching-learning techniques can be used as a generalization for all learning styles. Also, the types of curricular content to be learned must be considered.

Learning Styles in Relation to Academic Performance

In the research they carried out (Gonzalez, Saez, & Ramirez, 2016) it is an exploratory and comparative study of the learning styles of the data collected by the CHAEA and the grades of the students, which was available to 213 first-year Nursing students. semester.

From the conclusions of this, highlights the proposal of the application of teaching methodologies that stimulate the active participation of the student, leadership, autonomy, critical thinking and oral and written expression are considered optimizable. Similarly, it is suggested that, in order to obtain better performance, teachers know the learning styles of students and design pedagogical tools to promote learning styles and that students become aware of their own style. Since, as mentioned in the conclusions section, one of the ways to improve performance would be to promote teamwork based on the free association of students with different learning styles.

Juárez, Rodríguez, Escoto and Luna (2016), cited in (Polo & Pereira, 2019), studied the relationship between learning styles, teaching strategies and academic performance in university students in Mexico. The CHAEA questionnaire was used to identify the learning styles and the CEVEAPEU questionnaire for teaching strategies. The results of this research indicate that theoretical and reflective students obtained better academic results than active and pragmatic students.

(Alducin-Ochoa & Vázquez-Martínez, 2017), determined the dominant learning style of the students of the first year of Building Engineering (University of Seville), the influence of the style in the grades of each subject and if the style is affected by certain socio-demographic variables. The sample consisted of 161 students who answered the Honey Alonso questionnaire (CHAEA) and the CDAT. The descriptive and correlational methods have been used. For the data analysis, a univariate descriptive study was used, the one-way ANOVA, as well as the non-parametric Mann-Whitney and Kruskal-Wallis U tests, all of them with a confidence level of 95% (α=.05). The results show a predominance of the reflective style, and that the grades according to the styles are variable between the subjects. No significant differences were found in the gender variables.

ISSN-2523-0336

On the research of (Carrascos Cifuentes & Gonzalez Mendez, 2018) which is a quantitative study of cross-sectional design in which the sample consisted of 164 students, of which 113 correspond to women and 51 to men, for which the used the Honey-Alonso Learning Styles questionnaire (CHAEA).

One of the main results observed was that the active style was negatively correlated with performance, which indicated that the students with higher academic performance had lower scores in the active style, seen in another way, being an entertainer, improviser, risky, spontaneous, living in search of new experiences, among others, are characteristics that negatively affected the academic performance of students.

(Fonseca, Salcedo, & Rocha, 2018), analyzed the relationship between styles and learning strategy with academic performance in internal and external evaluations in the Natural Sciences component. Seventy eleventh grade students were selected for the 2016 academic period. The techniques used were: the Felder Learning Styles measurement questionnaires, abbreviated version (2004) and ACRA Learning Strategies, abbreviated version (2003), the academic and the result of the Saber 11^{th} tests in the Natural Sciences component academic period 2016. The quantitative approach was used, framed in the positivist paradigm. The results of this work show the importance of knowing the students and thus implementing media pedagogical strategies for the proper development of knowledge in the area of Natural Sciences.

Learning Styles Relating to Gender

(Acevedo, Cavadia, & Alvis, 2015), analyzed the learning styles in students of the Faculty of Engineering of the University of Cartagena. The sample consisted of 144 students, 72 women and 72 men of average age 22 years. The Honey-Alonso questionnaire on learning styles was applied to identify the active, reflective, theoretical and pragmatic behavior of the students. For this, a bifactorial analysis of variance and a Pearson correlation ($p \leq 0.05$) were performed. The predominant style was reflective, with 31.9% of men and 36.1% of women in this category. There were no significant differences by gender ($p > 0.05$).

In men there was a direct correlation between reflective and pragmatic ($p < 0.05$) and in women an inverse relationship was found between active and theoretical ($p < 0.05$).

It is observed in one of its many results that from the sample grouped by the gender variable, it can be observed that both (both female and male) have a moderate preference for Active, Reflective, Theoretical and Pragmatic Learning Styles; the Reflective style in the masculine gender has a low preference with a tendency to moderate.

In the research carried out by (Reyes Meza, Avila Rosales, Andrade Torres, & Alcivar Cedeño, 2019), which is defined as field research, with the application of the chaea questionnaire to 300 high school students from the educational units of Chone present in 150 men and 150 women.

Among its predominant results, it is highlighted that the learning styles between diverse tasks that characterize men and women are recurrent, although reflective predominates in both genders, it is noted that men are more reflective than women, however women are more pragmatic than men, which indicates that men are more observant and women are more active and practical, showing that they are more applied than men when developing a task.

With regard to the research of (Tobon and Trujillo, 2019), which was carried out through a quantitative study, in which a random sample of 138 students belonging to the Faculty of Administrative and Economic Sciences was used, through of the Honey-Alonso CHAEA Learning Styles questionnaire which consists of 80 questions.

One of its main conclusions is that both the university women and men in this study share a reflective style in their way of learning, this type of learning is characterized as conscientious, receptive and analytical, additionally, the men are thinkers, disciplined and ordered due to their complementary learning style which is the theoretical one.

ISSN-2523-0336

The factorial validity, both global and between them, showed that the structure proposed by Schmeck (1991) is maintained with the small logical differences in any type of experimental replication and that the data on the reliability of the instrument have been higher than those obtained in its day. by the authors themselves, which could be explained by the different sample size used.

Schmeck Learning Styles

Several studies over time have tried to determine the way in which people conduct learning. Various authors have pointed out different approaches to the subject, which has led to the formulation of various theories on the aspects that affect the way people learn.

Understanding this variety of studies will facilitate the deepening of the subject since it will be easier to build on this work.

For Schmeck, (1982), on the other hand, a learning style, "is simply the cognitive style that an individual manifests when faced with a learning task, and reflects the preferred, habitual and natural strategies of the student to learn.

Schmeck (1982) defines three learning styles, each of which involves the use of a particular learning strategy by the student:

Depth style: typical of the student who uses the conceptualization strategy, which means that when he studies, he abstracts, analyzes, relates and organizes the abstractions (a facilitating strategy for high-level learning); Elaboration style: which implies the use by the student of a personalized strategy. For this student, the study content must be directly related to himself, to his experiences, to what has happened or he thinks will happen (facilitating strategy for medium-level learning); and Superficial style: which implies the use of a strategy focused on memorization; the student only remembers the content he / she reviewed while studying (a low-level learning facilitation strategy).

In other words, the deep style is typical of students who adopt the following strategies: conceptualization. By studying, you can abstract, analyze, relate, and organize abstraction (a strategy that promotes advanced learning). While the elaborative style means using individualized strategies. For this, the student and the learning content must be directly related to him. He himself, his experience, what happened or what he thought would happen are strategies to promote intermediate level learning in students. Finally, in the superficial style, this means using strategies that focus on memory, only students remember what they have seen while studying.

Methodology

Since the establishment of the question that serves as a primary part of the research was carried out, a search is carried out on the bibliography that bases and supports the main proposal of this research work; the general objective, the specific objectives, the research questions and hypotheses are developed, which coincide and are formed with the simple and complex variables of the instrument that is used.

Based on the previously established criteria, the sample with which it was worked was determined, indicating its application to 1412 people, being students of higher education, to facilitate the application it was modified digitally due to current social conditions. Therefore, the application of the instrument was applied through Google Forms.

The instrument is made up of two sections, the first one locates the general data of the variables such as: Age, Gender, City where you study, State where you study, Educational institution, Career, Study mode, Average, Currently working, Has worked with anteriority; Another section corresponds to the dimensions that complete the Learning Styles, some of them with a subdimension made up of 150 items measured using a scale from 1 to 6.

ISSN-2523-0336

Once the data obtained has been organized in a concentration matrix, they are given the statistical treatment. The data were processed through a descriptive analysis that corresponds to frequencies and percentages, a comparative analysis through the Student's T test This research is quantitative, observational, descriptive and comparative.

Results

Descriptive Analysis

Frequencies and Percentages

An analysis of frequencies and percentages of the signal variables that represent the research sample is presented, the total of which corresponds to a value n of 1412 subjects.

From the results, it is observed that 64.38% (n = 909) are women, while 35.06% (n = 495) are men and 0.57% answered female, male (n = 8) and the age range ranges from 14 to 52 years, the ages with the greatest presence are 20 years whose value is 14.94% (n = 211) and 21 years whose value is 17.42% (n = 246).

In addition, it is observed that of the total sample, 78.61% (n = 1110) are from the city of Saltillo and 92.35% (n = 1304) are from the State of Coahuila de Zaragoza.

It is observed that the educational institutions with the greatest presence are the Autonomous University of Coahuila with 46.32% (n = 654) and the Technological Institute of Saltillo with 8.57% (n = 121) and the majors with the largest sample are Psychology with 11.69% (n = 165), Bachelor of Education Sciences with 11.40% (n = 161) and Industrial Engineering with 8% (n = 113) in terms of the modality that represents the sample is per semester with 77.76% (n = 1098). 15.79% (n = 223) of the sample have an average of 90 and 8.22% (n = 116) have an average of 80.

It is observed that 50.92% of the sample (n = 719) do not currently work and 49.08% (n = 693) do. On the other hand, 80.24% (n = 1133) report that they have worked before, while 19.76% (n = 279) have not.

Comparative Analysis

Student's t for independent samples

An analysis is presented in order to compare samples through their arithmetic means and find significant differences between groups of the sample studied with the Student's t test for independent samples with a probable error value less than 0.05 ($p < 0.05$). The statistical values that appear in this analysis are the values of the sample of each analysis group (Mean of the groups), the value of the t-test (t-value), the degrees of freedom (df) and the probability of the level error (p).

Comparative Student's T Gender vs Self-affirmation, Elaborative Processing and Random Responses

The reading in relation to the comparison between self-affirmation, elaborative processing and random response scale and the male and female genders reports that: It is observed that men are mostly not afraid to tell some authority what they disagree with, it is easy for them public speaking, they are more outgoing, they have not doubted the answers of a test compared to women.

Women have a greater interest in self-development, it is easy for them to remember words, they create systems to remember data while studying, they tend to create relationships of ideas, they believe that experience is important, for them life is a great adventure, they consider that Feelings are a very important part, they consider a person's point of view so important, they have a lot of interest in family values, they believe in intuition, ideas from books often make their mind wander and sometimes it seems to them I think with images and they have never failed a math test, all this compared to men.

It is inferred that men have a majority personal control to that of women, allowing them to establish relationships, make themselves known within social groups so they are not afraid to express themselves, showing that their degree of confidence and security in the things they do is high, unlike of women who exhibit lower-key, calmer qualities by spending time on academic and family issues.

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Comparative Student's T Average vs. Self-affirmation, Elaborative Processing and Random Response Scale

In reading the comparison between self-assertion, elaborative processing and the random response scale against students who have an average of 90 and 80. It is observed that mostly students who have an average of 90 are not afraid to tell the people about their feelings, are primarily interested in self-development, develop study systems, consider experience so important, have a good imagination, ideas from books, often make their mind wander and never fail at anything they deal with to do compared to those with an average of 80.

It is inferred that students with an average of 90 develop an interest in continuing to learn and discover not only academically but personally, they are more expressive to people, they tend to make mistakes a minimum because they have confidence in everything they do.

Comparative Student's t-test You currently work vs Self-affirmation, Elaborative processing, Random response scale

A reference between self-assertion, elaborative processing and the random response scale against students who currently work and those who do not. It is observed that students who work mostly do not find it difficult to speak in public, consider themselves as extroverts, do not doubt their performance in an exam and have never made a mistake in a math problem, while students who do not work They are mostly interested in self-development, remember words and ideas, believe that the experience is important, consider that life is an adventure and their feelings are important to them.It is inferred that work while studying provides an ability to relate to others, but dedicating yourself solely to study allows more space to enjoy daily learning and full dedication to academic growth.

Comparative Student's t-test Previous work vs Self-affirmation, Elaborative processing and Random response scale

Regarding the comparison between self-assertion, elaborative processing and the random response scale against students who worked previously and those who did not. It is observed that students who have not worked before prefer to sit and listen to others, make relationships to understand new ideas, consider that the experience is important, consider that life is an adventure, their feelings are an important part, for them the point of view of a person is important, they are interested in the values of the family, they have never had a bad math problem, compared to those who have worked who mostly find no problem speaking in public and consider themselves a person outgoing.

It is inferred that students who have not worked previously have more capacities to dedicate their time to their personal and academic growth, so they do not neglect their responsibilities and are able to have a balance in each task that they carry out, fulfilling them successfully.

Comparative Student's t University career vs Elaborative processing and Random response scale Likewise, the reading reports that, the comparison between the elaborative processing and the scale of random responses against the subjects who study the Bachelor of Psychology and those who study the Bachelor of Science in Education. It is observed that mostly psychology students when trying to understand new ideas, often relate them to old ideas compared to students of educational sciences.

It is inferred that students of the degree in educational sciences practice more mental agility, are quick to respond and analyze situations, this allows them to answer questionnaires with confidence and be assertive in their answers.

ISSN-2523-0336

Conclusions

According to the results obtained through the different statistical processes applied, this section presents the conclusions that respond to the specific objectives, previously raised according to the statistical levels with which we worked. Therefore, it is concluded that:

Men have greater personal control than women, allowing them to establish relationships, make themselves known within social groups, so they are not afraid to express themselves, showing that their degree of confidence and security in the things they do is high, unlike women They present calmer, low-key qualities by spending time on academic and family issues.

It is also concluded that students with an average of 90 develop an interest in continuing to learn and discover not only academically but personally, they are more expressive to people, they tend to make mistakes a minimum because they have confidence in everything they do.

Regarding the fact that the student works while studying, it provides an ability to relate to others, but dedicating himself solely to study allows more space to enjoy daily learning and full dedication to academic growth.

In relation to the students who have not worked previously, it is concluded that they have more capacities to dedicate their time to their personal and academic growth, so they do not neglect their responsibilities and are able to have a balance in each task that they carry out by fulfilling them. successfully.

In turn, it is concluded that students of the degree in Education Sciences practice more mental agility, are quick to respond and analyze situations, this allows them to answer questionnaires with confidence and be assertive in their responses.

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ISSN-2523-0336

Article **Journal High School**
December 2021, Vol.5 No.14 10-20

Study and work in times of pandemic, how do university students solve technological-digital situations?

Estudiar y trabajar en tiempos de pandemia, ¿Cómo solventan las situaciones tecnológico-digitales los estudiantes universitarios?

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DOI: 10.35429/JHS.2021.14.5.10.20 Received July 15, 2021; Accepted December 30, 2021

Abstract

After the declaration of a health contingency by the WHO and the Mexican government, the university community took refuge in their homes, waiting to return to face-to-face classes. As the confinement dates lengthen, online educational interactions are hampered because students' manifest problems related to the internet and technological-digital resources, since now they must be shared with relatives who are also in confinement; In addition, some students work online, which complicates the situation in which they live, study and work. Although learning is involved in these situations, it is not addressed in the present study; The results provide elements that lead to lines of research where, from the student perspective, the role of the teaching-learning process, academic performance and learning are reviewed, as well as the relationship between education and online work. In this context, the proposal of the study is exploratory, quantitative, and longitudinal; The sample is for convenience and 31 (August 2020) and subsequently 28 students (March 2021) voluntarily participated. The objective is to explore the conditions in which undergraduate students solve socio-educational-labor situations with the use of technological-digital resources during the COVID-19 pandemic.

Technological-digital resources, COVID-19, Socio-educational-labor context

Resumen

Tras la declaración de contingencia sanitaria por parte de la OMS y el gobierno de México, la comunidad universitaria se refugia en sus hogares esperando el regreso a clases presenciales. Conforme se alargan las fechas del confinamiento, las interacciones educativas en línea se ven obstaculizadas porque los estudiantes manifiestan problemáticas relacionados con el internet y los recursos tecnológicos-digitales, ya que ahora se tienen que compartir con familiares que también están en confinamiento; además, algunos estudiantes trabajan en línea, lo que complejiza la situación en que viven, estudian y trabajan. Aunque el aprendizaje está implicado en estas situaciones, no se aborda en el presente estudio; los resultados aportan elementos que derivan en líneas de investigación donde, desde la perspectiva estudiantil, se revisa el rol del proceso de enseñanza-aprendizaje, el rendimiento académico y los aprendizajes, así como la relación de la educación y el trabajo en línea. En este contexto, la propuesta del estudio es exploratorio, cuantitativo y longitudinal; la muestra es por conveniencia y participaron voluntariamente 31 (agosto 2020) y posteriormente de 28 estudiantes (marzo 2021). El objetivo, explorar las condiciones en que los estudiantes de licenciatura solventan las situaciones socioeducativo-laborales con el uso de recursos tecnológico-digitales durante la pandemia COVID-19.

Recursos tecnológico-digitales, COVID-19, Contexto socioeducativo-laboral

Citation: YAÑEZ-FLORES, Sara Margarita, SALINAS-AGUIRRE, María del Consuelo, HERNÁNDEZ-CUETO, Jaquelina Lizet and GUAJARDO-GÓMEZ, Ana Daniela. Study and work in times of pandemic, how do university students solve technological-digital situations?. Journal High School. 2021. 5-14:10-20.

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Introduction

University students, the focus of this study, not only face the dilemma represented by the sanitary confinement derived from the COVID-19 pandemic, but they also must deal with an unsuccessful online education both in operational and pedagogical terms. But in addition, most of them do not have adequate technological-digital resources for online interaction, which further aggravates their situation.

In this regard, ILO Director General Guy Ryder states "The pandemic has a very adverse impact on young people. Not only does it reduce their employment and professional future, but it also greatly undermines their education and training, and therefore their mental well-being. "(OIT August 2020)

How do university students solve technological-digital situations? In Mexico, INEGI through the Measurement of the Impact of COVID-19 on Education (ECOVID-ED) and the Telephone Survey on COVID-19 and the Labor Market (ECOVID-ML, help to visualize the conditions in which they develop classes and online work, accommodation, and adaptation situations that families and young people carry out.

The article Study and work in times of pandemic How do university students solve technological-digital situations? presents the results of the diagnosis (August 2020) and follow-up (March 2021) on the socio-educational-labor situation and the types of technological resources -digital (RTD) available to young people to carry out their studies and, where appropriate, work online.

To frame and give fluidity to the information, section 2, *Pandemic Evidence*, succinctly addresses the chronology and contingency measures indicated by international organizations, government, and university institutions.

What refers to the description of the type of research, the scope of the study, the type of sample and the variables, is in section 3, *Methodological process*.

The *Results* and their analysis are explained in section 4, which is subdivided according to the design of the instruments used: General data**,** Technology, and interaction and, Work and education.

Section 5, *Conclusions*, presents the empirical evidence contrasting with what is referred to by organizations, institutions and authors consulted; finally, in section 6, the *Documentary references* reviewed and analyzed for the development of the article are included.

Objectives

General

Explore the conditions in which undergraduate students face socio-educational-labor situations with the use of technological-digital resources during the COVID-19 pandemic

Specific

- Describe the demographic and socio-educational characteristics of the participants.
- Identify the types of technological-digital resources that students have.
- Identify the technological situations involved in online education in times of pandemic.
- Describe the educational-working conditions of the students.
- Identify if there were changes in the educational-work situations in the two moments of study.

Evidence of the transition

At the end of December, it was thought that the transition from 2019 to 2020 would be within the daily routine in which each new year would arrive with the usual increases in the prices of food, electricity, medicines and, among others, the increase in the minimum wage in force in the country.

ISSN-2523-0336

However, on December 31, 2019, the Chinese authorities report cases of pneumonia, which are later reported to be caused by a new coronavirus; On January 30, the Emergency Committee recommended to Dr. Adhanom, WHO Director General that the outbreak constitutes a public health emergency of international concern (ESPII). It is March 11 when the WHO "determines in its evaluation that COVID-19 can be characterized as a pandemic." (OMS, abril 2020)

On March 10, the WHO, UNISEF, the International Federation of Red Cross Societies, among other organizations, published a guide where the most important issues that allow safety in educational institutions are found, as well as practical recommendations directed to the parents of family / guardians, their children, and students in general. (OMS, enero-junio, 2021).

Disruption in education

In the case of Mexico, as indicated by the WHO, Agreement number 02/03/20 is published in the Official Gazette (DOF), where the Ministry of Public Education (SEP) officially initiates the suspension of face-to-face classes from March 23 to April 17, as a preventive measure to prevent the spread of COVID-19.

From now on, agreements are published where the class suspension dates are extended at the national level and, at the same time, the previous agreements are modified (for instance, Agreement number 03/06/20, the suspensive period is extended from March 27 to April 30; Agreement number 04/09/20 the period is from March 23 to May 30). (SEP, enero-diciembre, 2020). On the part of the National Association of Universities and Institutions of Higher Education (ANUIES), the rectors and directors meet on March 20 and address the recommendations of the National Council of Educational Authorities, in coordination with the Health Secretariat of the Federal Government; meeting where the document COVID 19 Action Guidelines for Public Institutions of Higher Education is released and, in accordance with the secretarial agreements, the first date of suspension of face-to-face classes in the HEIs is notified, as well as the health prevention measures (UAdeC, marzo 2020).

Alcántara (2020), points out that international studies by Brown and Salmi (2020) show that "… many university institutions have closed and tried to adopt online learning, very few are well prepared to make this change quickly and abrupt", adding that "… again, students from the most vulnerable groups have been the most affected". (pp. 76-78)

In Mexico, a similar situation is experienced at all educational levels, since the pandemic has made visible:

> … The shortcomings of our institutions in terms of infrastructure and training of academic staff to successfully carry out online education. … Has clearly exhibited the enormous inequalities that exist among the student population, which raise concerns that the digital and learning divide may continue to widen. (Alcántara, 2020, p.80)

For her part, Barrón (2020) comments that:

> … Each school has taken on the task of designing proposals to give continuity to academic work during the health contingency, with the main support of the ICT. The challenges and challenges have not been minor, and are of a diverse nature, whether of a technological nature or the training of teachers and students for the use and management of digital platforms. … In our country 60 percent of the population lacks a computer and does not have access to the internet, and whoever has it, bandwidth and connectivity are limited for the intense work required. (p. 68)

For the specific case of the Autonomous University of Coahuila (UadeC), Communiqué 03 is published where, in addition to the recommendations and indications derived from the suspension of face-to-face activities, it is indicated:

> … To the teachers to coordinate with the students to establish mechanisms of work at home or remotely, using the platforms and systems of the University, or assigning readings or work to take home during the period of the contingency. (UAdeC, marzo 2020)

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Likewise, the Actions against the COVID-19 Health Contingency are published and that impact on the continuity of the learning-teaching process:

> ... guarantee an online work scheme so as not to interrupt the classes, using technological tools such as Microsoft Teams, Google Classroom and Zoom so that their students can continue with the discussions, readings, tasks, and evaluations, also, teachers were trained to handle digital platforms on the distance teaching-learning process. (UAdeC, June 2020)

In the Academic Continuity Plan, programs are established to serve students, such as the opening of computer centers at the different Infotech libraries in Saltillo, Torreón, Monclova and Nueva Rosita. (UAdeC, junio 2020)

In the student population, the problems, in addition to the damage to emotional health, whether they like online training, focus on having technological-digital resources that facilitate synchronous or asynchronous interactions to advance their professional studies.

As Fernández (2020) comments:

> [the] Online classes, work meetings through platforms, communicated by internet mail, by WhatsApp and other social networks made it possible for us to stand up to the educational process ... It is true that the conditions and technological capacities vary among these, as also happens and it is natural among those who make up the teaching and student community…. (p.27)

Study and work online

Lloyd (2020) refers that since 2018 the National Survey on Availability and Use of Information Technologies in Homes (ENDUTIH) shows that:

> … Only 45 percent of Mexicans have a computer and 53 percent have access to the Internet at home, [but] such access is not distributed equally, since 73 percent of the population in urban areas has access to Internet, compared to 40 percent in rural areas. Even more worrying, only 4 percent of rural residents have Internet at home (as cited in Ordorika, 2020, p.3)

The results of the Survey to Measure the Impact of COVID-19 on Education (ECOVID-ED) for the 2019-2020 school year, shows a reality like ENDUTIH 2018, since the results indicate that not all the higher-level population counts with technological-digital resources to pay for education, and where appropriate, online work, since:

> … 33.4% have smartphones; 52.4% laptop and 12.9% desktop computer. Of which 67.7% refer that the appliances or devices are property of the home and were for exclusive use; 28.5% are property of the house and shared it with other people of the same; 2.7% indicated that they had to borrow it from people in another home and 0.5% had to rent it or pay for its use.

For the 2020-2021 school year, it is observed:

> … A decrease in the use of smartphones (31.8%) and desktop computers (11.2%) and an increase in the use of laptops (55.7%). (INEGI, 2020)

There are no significant variations in the behavior of the data, however the increase in the use of laptops also refers to the ease and comfort of / in their use.

Families to pay for online classes make accommodations at home, which represents additional expenses in their economy, already diminished by the contingency and closure of jobs; according to ECOVID-ED:

> … 28.6% indicate buying smartphones; 26.4% contract a fixed internet service; 14.3% spend on laptops / desktops and 6.2% spend on phone recharges or internet chips. (INEGI, 2020)

In general, it is indicated that 56.4% of families in Mexico have fixed or mobile internet connection (data purchase), but when asked if they have a computer at home, this percentage drops to 43%. (Trejo, 2020)

In April-July, INEGI carries out the Telephone Survey on COVID-19 and the Labor Market (ECOVID-ML), whose target population is 18 and over, a telephone user; The results indicate that the conditions for working online are not entirely ideal either, since:

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> … In April of the 23.5% who work, 70% have the equipment, 25% have part of the equipment and 5% do not have equipment to work with. In contrast, in July, the 15.2% who indicate that they work, 81% have equipment, 16% have part of the equipment and 3% do not have it. (INEGI abril-julio 2020)

In addition, ECOVID-ML shows that during the health contingency, the jobs performed are, among others, domestic work, caring for people, paperwork; what refers to the simultaneity of work-education stands out that:

> In April, 24% of women and 19% of men were working and studying; In contrast, in July the percentages decreased: 11% for women and 13% for men. It is observed that as the months pass, the participation of women decreases (24, 17, 16 and 11%). (INEGI, abril-julio 2020)

According to the results of the surveys carried out by the INEGI, the lack of technological resources does not facilitate the educational-labor processes of the students, and, in addition, they upset the family economic environment.

Methodology

Type of research

The study begins with an exploration that would allow diagnosing the educational situations of 31 students, at that time in the 3rd semester of August 2020, already in a confinement and online education scenario, with the purpose of making didactic adjustments in the virtual classroom.

However, in March 2021 the evidence that show problems for students to join their academic activities online are reiterated and, students combine study and work, which increases difficulties in the subjects studied in that semester; Therefore, it is decided to carry out a follow-up to detect if there were changes in the situations of the students, now in the 4th semester.

With the resulting data, the differences are reviewed and compared, finding that although the variations are minimal, they impact online interactions, not only with the subject itself, but with other subjects.

For this reason, it was decided to share the results in the study called Study and work in times of pandemic how do university students solve technological-digital situations? Which due to its characteristics is mostly quantitative, exploratory, and longitudinal (August 2020-March 2021).

The results are explored and analyzed from the experiential perspective in the family, training, and work contexts of undergraduate students (3rd-4th semester); However, it is considered that the results allow new and convergent lines of research where not only the situations referring to technological-digital resources are reviewed, but also the changes in the teaching-learning process, academic performance, and other variables of equal importance.

Scope of study and sample

The study was carried out at the Autonomous University of Coahuila with the participation of students from a single academic unit.

The non-probabilistic sample used was for convenience or availability, since the voluntary participation of students from 3rd to 5th semester (except those who had just entered) of the career was requested; however, this was not possible, since the students expressed fatigue to respond to instruments that addressed the "Covidian" situation from different approaches: psychological, sociological, economic ... not only from the degree itself, but from other schools / faculties of the university.

Although it is not a sample in the statistical sense of the term, it is a sample population, in this case of a semester.

However, although it is not a representative population of the total population of the undergraduate degree, its results do provide relevance in the daily life of online interactions and the situations that young students experience.

Variables

The variables that make up the first part of the study refer to sociodemographic data: age, marital status, if you are a foreigner and with whom you live.

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The complex variable Technology and Interaction is made up of the types of technological-digital resources available; in the case of not having them, how is it solved; with whom and why are they shared; the type of wired / wireless connection, among others.

The complex variable Education and Work, variable was incorporated into the Follow-up (March 2021) and is composed of work shift, study-work simultaneity, problems with their teachers and with employers. In both complex variables, the answer was used by option or multiple selection.

Finally, a space was left for the students, in the case of presenting connection problems, to explain the reasons for it; Due to its characteristics, it is an open question, which was post-coded according to the answers given by the respondents.

The measurement instrument was designed and shared on MS Forms © and Teams ©; platform used for online education and interaction.

Sociodemographic results

There was the voluntary participation of 31 and 28 students (diagnosis, follow-up, respectively); This was perhaps due to temporary withdrawal from their studies or not wanting to continue participating. In both cases, diagnosis 70.97% (n = 22) and follow-up 71.43% (n = 20) are women.

About age, in both studies the ages are concentrated in the 17-20 years; however, variations in age are observed, for example, the 25- to 28-year-old group disappears in the follow-up; and the students aged 29 and over increased.

The marital status of the students is mostly single without children (both studies); the divorced group (with or without children), previously present in the diagnosis, no longer appears in the follow-up.

Most of the participants live and are from Saltillo, Coahuila; only four students are foreigners, some of them live in cities in the state of Zacatecas or in ejidos of Coahuila; this occurs both at diagnosis and at follow-up.

Diagnosis			Follow-up		
Parents/ brothers/ family members	22	70.97	Parents/ brothers/ family members	23	82.14
With parents	4	12.90	With parents	3	10.71
Husband/ childless couple	3	9.68	Husband/ childless couple	2	7.14
Shared apartment	1	3.23			
Alone	1	3.23			

Table 1 Description of the population: Who do they live with

Most live in / with their family, identifying that there is variation in both cases of the study; in the follow-up the answers of shared department or alone no longer appear; this due to the situation derived from COVID-19 and returning to their place of residence (Table 1)

Technology and interaction

The purpose of this section is to identify which RTDs students count on for their online interaction, with whom and how they are shared. Table 2 and 3 identify the variations that occur in diagnosis (August 2020) and follow-up (March 2021).

Indicator	Fr	%	RTD	Fr	%
Parents/ brothers/ family members	18	58.06	Personal computer (Laptop), Tablet	24	77.42
No need to share	10	32.26	Smartphone	3	9.68
Husband / partner and sons	2	6.45	Computer desk Laptop and Smartphone	3	9.68
Friends/ roommates, care home	1	3.23	Computer desk	1	3.23

Table 2 Sharing technological-digital resources: Diagnosis (August 2020)

In the first stage of the study (Table 2) the tablet RTD still appears, along with personal computers; In March 2021, the use of smartphones increased, and personal computers (Laptop) decreased slightly.

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What refers to the shared use of RTDs, presents variations; In Table 3 the students who indicated sharing with their partners or colleagues, no longer appear in March 2021, which are the people who no longer answered the instrument (Follow-up) and / or returned to their city of origin derived from the suspension of face-to-face academic activities.

Indicator	Fr	%	RTD	Fr	%
Parents/ brothers/ family members	17	60.71	Personal Computer (Laptop) Smartphone	18	64.29
No need to share	11	39.29	Smartphone	3	10.71
			Computer desk Laptop and Smartphone	2	7.14
			Computer desk	1	3.57

Table 3 Sharing technological-digital resources: Follow-up (March 2021)

In addition to the above, it is observed that not sharing remains> 30% and sharing it with the family increases slightly in the second stage of the study (Table 2 and 3).

More specifically, Table 4 shows that seven students indicate the number of people they share with (22.58%), only one student shares it with five people (Diagnosis, August 2020).

Diagnosis	Fr	%	Follow-up	Fr	%
2 people	4	12.90	3 people	8	28.57
1 person	2	6.45	2 people	6	21.43
5 people	1	3.23	4 or more people	2	7.14
Total	**7**	**22.58**	**Total**	**16**	**57.14**

Table 4 People with whom RTDs are shared

In addition to the above, in both studies a balance is observed in the need to share RTDs, which refer to studying and working online (Table 5); variations in frequencies / percentages are observed, but they are not significant.

Diagnosis	Fr	%	Follow-up	Fr	%
They study online	16	51.61	They study online	14	50.00
They study and work online	14	45.16	They study and work online	13	46.43
They work online	1	3.23	They work online	1	3.57

Table 5 Need to share technological-digital resources

The reference of the way in which the student and their family members would solve the problems in the given case of not having RTD and / or for the shared use of these could not be missing; In this regard, the students indicated several solution options.

Diagnosis	Fr	%	Follow-up	Fr	%
Go to Internet Cafe Borrowed / Take out on credit	16	51	Buy RTD Borrowed Relatives will help to buy it / Take out on credit	19	68
Family help to buy RTD Take out on credit	8	25.81	Borrowed	5	17.86
Inst. Infrastructure Borrowed Cyber coffee	7	23	Infra. Inst. Borrow Buy RTD Family members will help buy it	4	14.29

Table 6 Problem solution: technological-digital resources

In the exploration and as a recent fact after the closure of the schools, the solutions to have / acquire RTD are varied; For example, Internet cafes are used and / or they go to institutional spaces / infrastructure, both as an emerging measure to later take out the RTD on credit or buy (Table 6).

In March 2021, buying or borrowing the RTD predominates with family support for it (Table 6); although cases were detected where it is assumed that they will assume this expense (those who work) - Relying on the infrastructure of their institution seldom appears.

Continuing in the *Technology and Interaction* section, they were also asked about the types of networks they used / use to connect and if this was shared with someone, 74.19% (n = 23, diagnosis) and 96.43% (n = 27, monitoring) the wireless network is used, only one student refers to the purchase of data (diagnosis).

And as in the case of sharing technological resources, wireless/wired networks are no exception, since it is mostly shared with family members (Table 7); in the diagnosis the answers are very similar with sharing the technological resources.

Diagnosis	Fr	%	Follow-up	Fr	%
Family	26	83.87	Family	25	89.29
With my children	2	6.45	Wives / Husband couple	2	7.14
Shared (friends, colleagues ...)	1	3.23	Familiar, but only you use it	1	3.57
Wives / Husband couple	1	3.23			
Exclusive for your use but with data purchase	1	3.23			

Table 7 Share wired and wireless connection

In the space that was presented to them to comment on the instrument (August 2020), or something related to it, a man and a woman indicated that:

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> “I think it should have been asked how many people need electronic devices for online classes and if these are enough for everyone; since in my case we only have 2 laptops to be able to carry out work / tasks and we are 5 people who are taking classes online”.
>
> "I live in Concepción del Oro, Zacatecas and the internet fails a lot, and here the data does not work."

After the review of the first instrument carried out for the exploration (August 2020) and by recommendations of the participants, in the Follow-up (March 2021) a space was included that requested If you have connection problems, explain the reasons for it; The answers were grouped by problem and are based on the 28 students who participated in the second stage of the study:

> *Problems with the Internet*. “Slow and several people use it at the same time; "The network is somewhat unstable"; "... the contracted service is of very low quality." "Few megabytes of navigation." "Eventually they come to do maintenance on the internet lines and cut the service"
>
> *Power failures.* "Problems with the modem, external interventions such as electrical services that sometimes damage the connection"; "... absence of electricity." "Power outages and interfering with the modem."
>
> *Share and low-quality RT.* “I consider that it is due to two main reasons: the first is because my parents work and use the Wi-Fi connection and my brother is studying so he connects to his classes and the second reason, I think it is because sometimes my computer it tends to be slow or hangs when sharing screen, but I solve this on certain occasions by entering through the mobile device”.
>
> *Network sharing.* "Several people using the network at the same time ..."; "There are many of us who take classes at the same time"; “… We are many people who work with this Wi-Fi”.
>
> *Unexplained problems*. "Sometimes the air or the passing of the cars lower the signal and interrupt the connection." "In my town there is no data, and the internet is the most basic. It doesn't work for video calls”. "When calls come in, the Wi-Fi signal goes out, I don't know why."

Work and Education

This section has the purpose of identifying the students who fulfill this double activity; Based on this question, the redesigned instrument for the Follow-up on Tools and Digital Access (March 2021) incorporated the questions about whether after the pandemic I continued in the same job, its turn and whether there is simultaneity between both activities.

The obligatory question is whether to work. Table 10 allows us to identify that after the pandemic there is a slight decrease in both “no” and “yes” to work; what is reflected in the Follow-up (March 2021) is "eventually”.

Diagnosis	Fr	%	Follow-up	Fr	%
No	20	64.52	No	15	53.57
Yes	11	35.48	Yes	8	28.57
			Eventually	5	17.86

Table 8 You currently work

Of the 11 students who indicated that if they worked (Table 8) in the March 2021, there is a decrease, of which eight are men and one indicates being divorced (29 years old) with an 8-year-old son; likewise, six indicate that they study and work online.

As for the three single women, two study and work online. Both men and women had smartphones. Only two, a man and a woman are foreigners.

To the question of If in August 2020, you worked, is it the same workplace what are you currently working on? 28.57% (n = 8) indicated that they did; only one said no.

Regarding the question, what is the line or type of job in which you currently work? They were given nine possible answers, in addition to the "other" to give them the opportunity for their own reply.

However, the students only selected the five that are observed in Table 9; one student indicates that “eventually he works in fast food establishments”; the one who stated that he "does not work in the same place" currently works in fast food establishments. For their part, the students who work in educational institutions are women.

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Indicator	Fr	%
Fast food establishments	3	10.71
Department store	2	7.14
Private educational institutions	2	7.14
Restaurant	1	7.14
Health establishments	1	7.14

Table 9 Work shift (Follow-up, March 2021)

They were questioned regarding If work and study are simultaneous, does this represent difficulties with your teachers? In Table 10, opinions are divided; the student who indicated "eventuality at work" indicates that the teachers are understandable with the situation.

Two men, one who works in a department store and the other in fast food establishments, point out that most of the time they have difficulties with their teachers.

For their part, one of the students who works in a private educational institution and the student who works in a restaurant (foreign) state that they do not have difficulties with their teachers because they strive to be active in their subjects.

Indicator	Fr	%
Sometimes	3	10.71
They are understandable of the situation	2	7.14
Most of the time	2	7.14
No, because you try not to miss with works and exhibitions	2	7.14

Table 10 Study-work simultaneity: difficulties with teachers

Regarding the difficulties with employers (Table 11), both those who work in restaurants, health establishments (i.e., doctor's office, pharmacy), as well as those who work in fast food establishments and a woman who works in an educational institution, state who strive to meet their obligations as an employee, which helps to avoid problems with their bosses.

Indicator	Fr	%
No, because I strive to meet my obligations	4	14.28
Sometimes	3	7.14
They are understandable with the situation	2	3.57

Table 11 Work-study simultaneity: difficulties with employer

At the end of the instrument, a blank space was left for comments or clarification to further explain their situation; One of the young people who indicated that they work in a fast-food establishment, wrote that “it was necessary to ask about the salaries that are received” and, in the same line of work, another expressed that “only add options of 2 or more jobs”. In both cases their ages range between 17-20 years.

Conclusions

Study and work in times of pandemic, how do university students solve technological-digital situations?

Most of the participants have more than one RTD and wired-wireless network, however the problem lies in shared use; complicating the situation in families where several members work online and the students themselves who combine study-work.

This duplication of activities has resulted in the need to make expenses outside the student-family budget, as shown in the ECOVID-ED results (INEGI, 2020), since it has made it necessary to buy or take out RTD credit to cope with the problematic.

This worsened from the moment when it was definitely impossible to go out to work-study; These same situations are presented in ECOVID-ML (INEGI, April-July 2020) where from April to July the percentage of both people who worked as well as the equipment necessary to carry out work online decreased; In the case of UAdeC students, borrowing, going to an internet café, or seeking support from the institutional infrastructure was not a viable option in the health contingency.

On the other hand, three students indicated that the duplication of activities has brought them difficulty with their teachers; those who said they had no conflicts is because they are active in their studies; the majority indicated that they do not have problems with their employer-bosses.

In addition, everything indicates that the people who live in Saltillo, Coahuila, although they manifest problems, for foreign students their situation is complicated by "internet instability, electricity failures and not being able to buy data."

ISSN-2523-0336

Same situation raised by Alcántara (2020), "… again, students from the most vulnerable groups have been the most affected"; and "the enormous inequalities that exist among the student population have been clearly exhibited, which makes us fear that the digital divide and that of learning may continue to widen."

Regarding the study-work relationship, only three women work in privately supported educational institutions, strongly related to their studies; however, most students work in fast food establishments and department stores.

It is intended to continue with the study, including the recommendations made by the students, such as the salaries received, the number of hours worked and if more than one job is done and some others that are considered could allow to continue describing the conditions in that students live, study and work in this new normal.

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Article **Journal High School**
December 2021, Vol.5 No.14 21-28

Integration of Four Basic Functions of Education in the Arts Unit of the Universidad Autónoma de Zacatecas

Integración de Cuatro Funciones Básicas de la Educación en la Unidad de Artes de la Universidad Autónoma de Zacatecas

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DOI: 10.35429/JHS.2021.14.5.21.28 Received July 20, 2021; Accepted December 30, 2021

Abstract

Four of the educational functions are: Teaching, Research, Management and Extension. These functions have led to an inequitable impact that has been determined by the identity characteristics of the Arts Unit (UAA) of the Universidad Autónoma de Zacatecas (UAZ). At the same time, they have developed in an evolutionary way within the Institution because it requires an organization and promotion process sheltered by certain parameters and indicators that can affect internal execution. In this work it was verified through a qualitative analysis how the integration of the four mentioned functions takes place from the artistic perspective projected by this Institution. The objectives pursued were to establish and analyze the disconnect that exists between these functions and the educational relationship of the Zacatecas Arts Unit, as well as to point out the integration needs with the community. It was found that these are determined and developed differently in the artistic area, so the pertinent evaluations through rigid models do not allow a complete integration of them. It is therefore concluded that it is necessary to detonate constant dialogic measures to carry out the desired integration, as well as actions determined by a correct analysis and organization within the Unit itself that lead to a more successful fusion of these educational functions.

Educational function, Art, Integration, Community

Resumen

Cuatro de las funciones educativas son: Docencia, Investigación, Gestión y Extensión. Estas funciones han conllevado a un impacto inequitativo que ha sido determinado por las propias características identitarias de la Unidad de Artes (UAA) de la Universidad Autónoma de Zacatecas (UAZ). A la vez, se han desarrollado de manera evolutiva dentro de la Institución debido a que se requiere de un proceso de organización y de fomentación cobijados por parámetros e indicadores determinados que pueden afectar a la ejecución interna. En este trabajo se comprobó a través de un análisis cualitativo como se produce la integración de las cuatro funciones mencionadas desde la perspectiva artística proyectada por esta Institución. Los objetivos perseguidos fueron establecer y analizar la desconexión que existe entre estas funciones y la relación educativa de la UAA-UAZ, así como puntualizar en las necesidades de integración con la comunidad. Se encontró que estas se determinan y se desarrollan de manera distinta en al área artística por lo que las evaluaciones pertinentes a través de modelos rígidos no permiten una completa integración de estas. Se concluye por lo tanto que es necesario detonar medidas de corte dialógico constantes para poder llevar a cabo la integración deseada, así como acciones determinadas por un correcto análisis y organización dentro de la propia Unidad que conlleven a una fusión más acertada de estas funciones educativas.

Función educativa, Arte, Integración, Comunidad

Citation: CAIGNET-LIMA, Solanye, CHÁVEZ-ACUÑA, Samuel Caleb and BAUTISTA-ACOSTA, Edgar Enoch. Integration of Four Basic Functions of Education in the Arts Unit of the Universidad Autónoma de Zacatecas. Journal High School. 2021. 5-14:21-28.

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Introduction

The functions of education in a higher education institution are complex and multifaceted. The word function comes from the Latin *functio*: execution, exercise of some faculty, function, fulfillment of a duty. Thus, we understand that the function of education fulfils the task of executing and forming, shaping the individual through an integral development towards a professional level and can be divided into multiple branches. In this paper we will talk specifically about four branches of education from the artistic perspective: Teaching, research, extension and management. We consider this issue to be important because as teachers in the area of Arts we find an area of opportunity for research in this area. Being academics within an Institution we wish to contribute to the continuous development of these educational branches that permeate our academic-artistic work. The theme was conceived by the authors after participating in meetings with virtual discussion groups such as: The meeting of graduates of the Arts Unit, The meeting of musical employers, meetings with university councils and academic restructuring boards.

Therefore, this is a qualitative observational research based on a focal group.

In the first section of the Article we find definitions of each of the educational branches and give a contribution for each, focused on the academic-artistic category.

In the second section we merge two branches into a single heading: teaching-research and extension-management. This with the eagerness to have a broader overview, because we understand that, although the four branches are indivisible, there is a wider correlation within these pairs.

In the next section we explain the Methodology and the objectives and in the last section we conclude the present investigation.

This paper aims to investigate the correlation between these four branches of educational functions within the UAA-UAZ, through a general and qualitative analysis. In the development section the corresponding analyses will be developed in pairs: Teaching-research, then Extension-Management.

The research question was: How does the balance between the four educational functions within the Arts Education that is taught in the area of Arts of the Autonomous University of Zacatecas.

Background and definitions

Education is a knowledge acquisition system that provides theoretical-practical understanding of a specific topic or topics depending on the area of study. We can be taught in institutions, centers or even autodidactically. The General Education Act establishes the various bodies responsible for the efficient and accurate implementation of the Act: "The implementation and monitoring of compliance with this Law shall be the responsibility of the educational authorities of the Federation, the States, Mexico City and the municipalities, in accordance with the terms established in the Seventh Title of the Educational Federalism." (General Education Act, Article 4)

Thus, this system, whose educational authority is the Ministry of Public Education (SEP), regulates education at the national level.

The four functions are indivisible and are feedback. (Recèndez and Muñoz,2014) explain that one of the considerations of teaching within the UAZ is the realization of the action of teaching and forming, coupled with the investigative action, an activity that is half supported. In addition, it states that the full-time teacher is obligated to carry out research, management, tutoring, etc. since they are part of the academic work and cannot be separated since these functions are assigned to formalize the professionalization process. (p. 75).

Teaching is a function that involves a set of indissoluble and evolutionary characteristics that can be constructed from a very particular definition:

> "Teaching is a work with and on others, it is an activity that develops in a set of intense and systematic interpersonal relations and, therefore, requires something more than the mastery and use of specialized technical knowledge. The teacher has to invest in the work his personality, emotions, feelings and passions, with all that it has of stimulating and risky at the same time." (Velaz, 2021)

ISSN-2523-0336

With the current pandemic circumstances, the teaching function has become more complex. Distance education is now a constant: "Distance education is a technological system of mass and bidirectional communication that replaces personal interaction in the classroom of teacher and student as a preferred medium of teaching, by the systematic and joint action of various teaching resources and the support of a tutorial organization, which promote the autonomous learning of students" (García 1990)

The characteristics of this current learning range from democratization and content facilitation (attention to students from different regions of the country and world, without the need for specific spaces and times), autonomous learning facilitating the tools for the student to practically self-form through specific didactics.

Thus, artistic education handles these concepts that strongly influence teaching, under a cultural-musical approach, that is, it is sustained by the teaching-learning of artistic concepts, musical, philosophical and psychological that are required within the corresponding curriculum. Because the Institution alone cannot contribute all the knowledge, for this there is the investigative function or research that provides intervention from the academic and student community, which prevents the Institution from simply becoming a mere repetition of archaic or outdated knowledge. Research is usually an approach that is given through a transformative process that emanates from the knowledge of the Society.

There are many types of research: basic, formative, applied, etc. At the Higher Education Institution, formative research trains the student and teaching community that seeks to become a researcher. Their aim is to make people learn to investigate, regardless of whether their results yield new or old knowledge. This phase usually occurs in the study of a Bachelor's degree. In the artistic area, research is taking new directions as more and more are interested in doing research work within the area. Opportunities and topics are unlimited and of high academic value.

University extension, another important function, is defined as the link between an institution and the community, with its needs and shortcomings, through identification programmes and actions, "is the set of activities leading to identify the problems and demands of society and its environment, coordinate the corresponding transfer actions and reorient and recreate teaching and research activities from the interaction with that context." (Doble Vìa, 2021)

The extent within the parameters of Artistic Education is determined all the time through the scope of it and its times, the understanding of the social context and its opportunities and weaknesses. Academic management, the fourth branch of the educational function, is aimed at facilitating and improving training processes in higher education institutions. This includes the follow-up of certain actions to improve the educational needs of teachers and students, the functions mentioned can be: Coordination of activities and events, preparation of plans, updating of programs, etc.

Development

We talk about the crisis of education, but it can be seen from multiple perspectives that encompass a complicated overview. From the perspective of an axiological analysis, this crisis is supported by the lack of articulation between the legitimacy and congruence of educational policies. "Education is responsible for the cultural architecture of man: values, cognition, affections, emotions, ideas, social practices, the meaning of life, language, meaning, symbols, knowledge." (León 2007)

These policies are then shaped from different angles that have to do not only with education but mainly with the social, family and the adaptation of the human being to the changing world of the current XXI century. Thus, the Autonomous Universities have had to adapt to the new challenges and challenges. The UAZ is the highest house of studies in the state of Zacatecas. It is made up of areas of knowledge, which in turn are made up of units. The UAZ has restructured its academic, political and social position in the face of the onslaught of world reality, in a systematic way.

ISSN-2523-0336

Within the humanistic-social area, the UAA is located. It offers different Bachelor's degrees: Singing, Instrument, Arts and Languages, all supported by the Ministry of Public Education: SEP.

Teaching and research at the UAA-UAZ

Teaching is one of the most interesting and complex functions of the Unit. UAA teachers are usually trained with the necessary skills to carry out their profession: ability to analyze, synthesize, work in a team, ability to adapt to different socio-cultural environments. The latter has developed due to the multiculturalism presented by both the teaching and student plants of the Unit.

Most teachers are under the figure of teacher-researcher and are subject teachers. In addition to this condition, the teachers, mostly with postgraduate studies, practice a strong research function that can even contribute to the applications of certain recognized calls such as those issued by the National System of Researchers (SNI). In the case of Bachelor's degrees in Singing and Instrument, teaching has developed under the old conservatory model of musical teaching: transmission of knowledge and artistic-musical experiences. Generally, the programs are built mainly with the archetypes of the teaching of classical or learned music, and through the music of the so-called great composers such as Bach, Mozart, Beethoven or Haydn.

There is little contact with Latin American music, contemporary music and identity music both state and national. The reasoning established for the development of the curriculum for the training of professionals is determined unilaterally by incomplete restructuring that often responds to a retraining of the individual training of teachers as a whole with musical aesthetic preferences of a personal nature.

The curriculum map is also subject to these parameters, made up of practical and theoretical subjects that hardly converge with each other with contents suitable for serious and concise reviews.

The challenge in terms of the teaching area of the Arts Unit of the UAZ is to adapt an appropriate curriculum of competencies and relevant to the social-cultural contexts of the Zacatecan and national Society, as well as the continuous development of the current mentoring program. In addition, an analysis of the scope of the entry and exit profiles is required.

These actions are activated according to the 21st Century Academic Model of the University: "The university curriculum as an academic, political, social and cultural project in a historical period of momentous changes and rapid communication, must anticipate the formation processes of each generation, endowing it with the fundamentals of contemporary knowledge, relevant competences and learning skills, as well as individual and social values that allow it to develop itself in the era of globalization and to respond critically and constructively to the demands of society." (Academic Model, UAZ-XXI century)

In the case of the investigative function that is an intrinsic part of the work of the so-called teacher-researcher is exercised from the identifications of the different areas of development and opportunity. In the area of music, the different researchers rescue, interpret and analyze through multiple themes and elements relevant to modern research. "Research and teaching are the axes of the academic life of the University and both are articulated with extension to achieve institutional objectives of an academic or social nature." (Segura, 2008) Within the UAA these axes converge in a complex way due to the particularities of the unit and also due to other interesting factors such as: working conditions, group versus time and the social and professional functions of teachers, combining the practical part of the profession with the different types of research.

Extension and management

University extension seeks a dialogic action with the Society. Both extension and management are inseparable from the aforementioned functions: teaching and research, since they add an invaluable value to educational training by strengthening the University's own indicators.

ISSN-2523-0336

Discussions on these functions have become more complex due to the continuing evolution of globalization. The UAA continues to develop plans and strategies to be an intrinsic part of the Zacatecan Society democratizing knowledge beyond its walls. But since art is still an elitist and somewhat snobbish task for the financial and polarized thinking of the current Zacatecan and Mexican Society, it becomes extremely difficult to manage university extension as a highly recommendable function, realistic and regularizing real integration with the Zacatecan Society.

In the Organic Law, in Article 4, section III mandata is established: "Extend and disseminate science, technology, art and culture"; while the General Statute of the UAZ, in its article 3 states that: "The fundamental tasks of the University are to provide education at the various levels and modalities; to organize, conduct and promote scientific, humanistic and technological research; and the extension and dissemination of science, technology, art and culture".

In the UAZ there are University Extension programs where musical and/or artistic groups have been developed, but there is still a way to go to make this pair a completely finished product, strengthened through the components of the rest of the functions. The extension does not cease to be a joint work in which a construction of existing deficiencies is recreated. It can be defined as social work and is very useful, but it must satisfy the current needs of the Zacatecan Society in the field of culture and knowledge.

The path seems to be the constructive dialogue between the University and the Society that surrounds it, to achieve a strengthening objective through the articulation of university functions.

University management focuses on the affirmation of quality and identity:

That is, a distinction must be made between the growing "polyfunctionality" of the university institution, and the unity of meaning that must govern it to avoid the risks of institutional opportunism, to overcome the centrifugal forces that can be unleashed and to make productive use of the interaction between disciplines and activities within the framework of diversity. (Martínez, 2000)

But the real impact of university management is difficult to identify in this artistic area. In the UAA, university management is exercised through coordination of artistic events, organizations of boards of academies and participation as examination juries or even of related competencies organized by companies or other institutions. Due to the characteristics of their curricula and the length of their duration, these activities become sporadic so that there is no constant impact of the university artistic management of the Unit. Thus, the UAA is constantly debated between the real tension that is generated between the imposed institutional preservation and the diversity within it, due to the particularities of its times and activities.

Because of this the management evaluation should: "...pay attention to the processes and meanings that are attributed to them and to how those meanings are shared, negotiated and mediated and infuse the actions that are undertaken."

Musical Education is not linked to the demands of the social and working environment that surrounds us, lacking certain values and relevance:

Musical education loses its importance in the educational system because national policies have focused on improving academic results in standardized tests, with the intention of forming a citizenship that is successfully integrated into the labor market. (Alvarado, 2018)

This measurement continues to be a challenge for the UAA: to be able to elucidate measures of action that correspond to the goals of the changing educational and political management, as well as to articulate a dialogue to raise awareness of the indicators within the imposed standardization.

ISSN-2523-0336

The Tutoring programs offered by the UAZ and that have an outstanding impact within the UAA, should be strengthened to form a human capital with skills of socialization and integration of work groups, academic or labor. There is a need to integrate outreach activities aimed at improving interpersonal relations in order to bridge the gap that exists since the University's linkage into a complex globalization process.

…Mexico's precarious educational and working conditions limit the possibilities of taking advantage of the globalization of the economy and digital modernity. If we anticipate a progressive unemployment of unskilled labor and a demand for highly sophisticated jobs, we must seriously consider, first, that compulsory education fully fulfil its mission of providing all Mexican students with the key knowledge, skills and competencies that will allow them to successfully move to higher education or the world of work" (2017 Backhoff)

The current evaluation system within the main UAZ calls, It fails to understand the complexity of the teaching of Art so it is necessary a sensible reformulation that stimulates and analyzes the real impact of the UAA on the current problem of the Zacatecan Society. The parameters by which music education could be measured do not compare with those of other units or professions, with enormous differences, although there are also a few points of convergence.

Conclusion

The career opportunities offered by the UAA-UAZ represent the sense of identity, value and academic and social control within their university world, but externally they are disconnected by a lack of integration of the four branches of education that fail to embrace the needs of Art in the face of the political and social panorama of Zacatecas and Mexico. From the teacher's point of view, very specific competencies are required: to be critical, reflective, analytical, conflict solver, systemic, combine divergent and convergent thinking in the search for positions, approaches, argumentations to finally be an important part of this integration between the four basic functions.

Extension and management must still be analysed and seen as areas of opportunity, but they are still limited by educational policies, as well as by the social deficiencies that require other concepts as primary objectives. Within the Tutorials of the University, it is suggested to establish competencies of personal interrelation that will help the members of the academic world to exercise the dialogic activities required from these complex processes. The future of education in Mexico is really uncertain. The future does not respond to something completely indeterminate and will depend on the outcome of decisions made in the present conditioned by social processes difficult to change and also conditioned from the angle of educational policies. A fairly long process is required as it is not yet determined in the near future how substantial a change would be in this area. In the study of the future, then, the researcher must employ methods and techniques that allow combining both the forces of the past and the options of the present.

The functions of education are related to the social and political phenomena of a given system and therefore must be rethought and analysed to carry them out either inductively or deductively from inside and outside the classroom for the best social insertion of each individual.

The problem of art and its projection articulates the four educational functions in a complex but innovative way. Music and art continue to be used as tools of distraction and not as an important part of Social Education, being a resource of primary importance for human development. The UAA has a titanic task that is re-established in each school cycle through the four functions mentioned. It is necessary to maintain the discussion forums and the dialectical interaction between the educational functions to foster an understanding and a more efficient articulation that enhances the guidelines to be followed in the advanced 21st century.

Results

It was considered important to perform a SWOT analysis to have a better visualization of the balance of the educational functions mentioned above: SWOT analysis

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Strengths

- The teaching plant of the Arts Unit is becoming more and more professional which causes a more accurate graft within the indivisible network of the four educational functions.

- Increase the number of teachers with the figure of teacher-researcher within the Unit who practice artistic research.

- Successful results have been achieved in teaching with outstanding and determined students.

Weaknesses

- With the current condition of distance learning, due to the pandemic situation, teaching has become complex

- Teachers and students needed time to find the methodologies and didactics necessary for their work at a distance. • Management and outreach activities are sporadic due to the complexity of curricula and work plans within the Unit.

- It is essential to develop a more appropriate teaching methodology that at the same time inserts the teacher and the student into the functions of extension and management, under the development of the necessary competences.

- Art continues to be an elitist task for national financial thought.

Opportunities

- Individual classes can be focused within a project that helps to remodel the extension function.

- Due to the intrinsic characteristics of the study programs, it is possible to work co-participated between teachers and students reinforcing the function of the Extension.

- Due to the size of the teaching and student plant, it should be possible to take dialogic actions in favor of the best needed.

- Due to the characteristics of the Unit, students and teachers can form research networks and extension activations by developing projects that propose modifications within cultural policies.

Threats

- The activity of the Arts Unit must follow the indicators and institutional parameters that are sometimes closed and disconnected from teaching and the field of the Arts.

- Since the European colonization in America, the imposition of musical artistic models within the curricula, has determined a scarce investigation of Latin American concert music, causing an identity crisis affecting the professional orientation of students and teachers' referents.

- Institutional indicators continue to be given through standardized tests giving more importance to academic results than to the evaluation and systematic development of skills.

The result of our research and answering the research question is that the integration of the four basic functions of education in the area of Arts of the Arts Unit of the Autonomous University of Zacatecas is weak and developing. It is highlighted in this result that the area of weaknesses comprises the greatest number of points, followed by the area of opportunities that shows us that only through group strength, co-participation and political wills coupled with an integrative and pertinent analysis, it is possible to begin to articulate a better disposition of the mentioned functions around the teaching of the Art within the University.

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ISSN-2523-0336

Article **Journal High School**
December 2021, Vol.5 No.14 29-36

Music education at the infant level through educational technology

La enseñanza musical en el nivel infantil mediante la tecnología educativa

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DOI: 10.35429/JHS.2021.14.5.29.36 Received July 25, 2021; Accepted December 30, 2021

Abstract

The teaching of music at children's levels is enriched using playful didactic tools to encourage interaction between students and teachers, which has traditionally been carried out in person. However, the global health situation has forced teachers to make use of technology to continue exercising the beautiful art of teaching. The objective of this research is to expose the experience obtained in the planning of instructional design in the music class with the use of Educational Technology for the children's level, where motivation, teaching through games, as well as elements and technological resources available, both the teacher and the student, plays a very important role in the development of the class. Aspects of instructional design are offered, particularized to the teaching of music at the children's level with the use of Educational Technology that can be a useful complement to the face-to-face class, without replacing the necessary communication and face-to-face interaction of the teaching model that is developed in the classroom.

Educational technology, Instructional design, Teaching music at the children's level

Resumen

La enseñanza de la música en niveles infantiles se enriquece con el uso de herramientas de la didáctica lúdica para fomentar la interacción entre alumnos y docente, que tradicionalmente se ha realizado de manera presencial. No obstante, la situación sanitaria mundial ha obligado a los maestros a hacer uso de la tecnología para seguir ejerciendo el bello arte de la enseñanza. El objetivo de esta investigación es exponer la experiencia obtenida en la planeación del diseño instruccional en la clase de música con la utilización de la Tecnología Educativa para el nivel infantil, donde en el desarrollo de la clase juega un papel muy importante la motivación, la enseñanza mediante juegos, así como, elementos y recursos tecnológicos al alcance, tanto del docente como del alumno. Se ofrecen aspectos del diseño instruccional particularizado a la enseñanza de la música en el nivel infantil con el empleo de la Tecnología Educativa que puede constituirse en un complemento útil para la clase presencial, sin sustituir la necesaria comunicación e interacción cara a cara del modelo de enseñanza que se desarrolla en el salón de clases.

Tecnología educativa, Diseño instruccional, Enseñanza de la música en el nivel infantil

Citation: RODRÍGUEZ-JUAN, Arién & OSA-RICARDO, Arlena. Music education at the infant level through educational technology. Journal High School. 2021. 5-14:29-36.

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Introduction

The educational path presents as the first phase the early childhood education, where the main objective is the physical, emotional development, the social, behavioral and intellectual exchange of the children and that goes hand in hand with the education at home.

Within the school planning, the different areas of knowledge that comprise the dissimilar contents to be developed at this stage are reflected, according to Pascual (2006), these areas are: identity and personal autonomy, discovery of the physical and social environment, and communication and representation; the latter being, par excellence, where music education is framed.

Worldwide and in a generalized way, music education, unfairly, plays a secondary role in education, this even though in the period understood as children, music plays a fundamental role in the teaching-learning process...

> ... music can be the basis for developing all the objectives, contents and activities of the teaching-learning process that take place in school, given that learning in early childhood education is developed in a globalized and interdisciplinary way and is aimed at all students, the most musically gifted. (pág. 51)

Similarly, dissimilar research carried out in fields such as biology, philosophy and education refer to the importance of incorporating musical education into the formation of the human being because of the contribution it perpetrates in the cognitive-social-physical-affective process.

Music education has a positive influence on each of the evolutionary spheres of the child's formation; as for psychomotor development has a very close relationship with music, which works mainly the knowledge of the sound possibilities and movement of the body, understanding that musical education would be difficult to evolve without movement and the body, meanwhile psychomotor education requires music, voice and musical instruments.

On the other hand, in terms of linguistic capacity, musical stimulation plays a relevant role if it is a question of increasing neural connections, which favors the development of comprehensive and expressive language; specifically, songs are powerful tools that help increase vocabulary, expression, intonation, articulation, vocalization and in the consolidation of definitions and concepts.

If it is about cognitive development, Calvo and Bernal (2000), cited in (2006)Pascual, express that, thanks to the interaction of the individual with music, general intelligence and musical intelligence progress, at the same time; music education deploys improvisation and imitation taking as a starting point previous perceptions, the latter is of vital importance in the appropriation of symbols in the late part of the preoperative and sensory-motor phase. It should not be forgotten that silence and inner concentration are essential for the assimilation of cognitive skills and aptitudes, music values silence very much and disapproves of the excessive use of noise.

The emotional part also presents a close relationship with music education. It is not denied that, in terms of school, the activities that are carried out inside and outside the classroom instill in the student good study habits in terms of reading, memorization and solving mathematical problems, however, equal importance presents social development, work in the community, the expression of emotions and the achievement of inner peace, skills that can be improved by listening to music and working on music education.

In this same sense, the United Nations Educational, Scientific and Cultural Organization [UNESCO] (2006) emphasizes that giving greater priority to art in educational systems is useful in the acquisition of cultural experiences, creates students of knowledge, values and prepared to raise more peaceful, solid and sustainable societies, which can be translated into that, Art Education (in this case musical) in schools is required, not to train artists, but to breed better human beings.

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Two aspects of musical education are recognized, the professionalizing one, taught in the conservatories whose objective "is the technical and artistic training of future professionals", (Carrera, 2017, pág. 3) and the general one which is within the curricula in compulsory education and in Early Childhood Education; that is, of the researchers Juan-Carvajal and Vdovina, (2020) there is a thin margin that delimits one from the other in the institutions of primary levels in Latin America, since the infants in this phase come to estimate, enjoy, communicate and express the music or to play some musical instrument as a game.

Everything expressed so far confirms Pascual's (2006) argument, which establishes that music education should be a right of every individual, being necessary to work with the seriousness and rigor that is handled in other areas of knowledge from Early Childhood Education; for which the teacher of this educational level must have musical and pedagogical skills, as well as the materials, means and resources required in the teaching-learning process.

The following aspects are presented as characteristics of children's musical education, in musical pedagogy (Pascual, 2006, pág. 12):

- Consider musical and non-musical sound (noise, ambient sounds).
- The integration of all types of music (contemporary, classical or cultured, modern popular and folkloric).
- The global work of musical perception and expression (vocal, instrumental and body).
- Prioritization of procedures and attitudes.

Taking as a flag the characteristics listed above, it is recognized the existence of institutions that present a musical training specialized in instrumental performance for children, that although, as Juan-Carvajal and Vdovina (2020) propose, it is not known for sure if in the future they will dedicate themselves to music professionally, in these schools they are prepared for that purpose; thus a series of pedagogical-musical methods are also identified, among which can be mentioned the *Dalcroze Method, the Orff, the Suzuky,* the*Willems, the Martenot, the Kodaly* and the *Ward method.*

To comply with the objectives set in music education, the reproduction of traditional, folkloric songs, especially children's themes, is used very frequently, which in this cycle are very easy for children to learn and fulfill the task of introducing the theoretical-practical content in subjects such as solfeggio and technique for instrumental interpretation.

In Gardner's words, the Suzuky method is the prototype for the progress of musical intelligence, however, according to Hardgreaves this method has had too much publicity in recent years but presents more limitations than those of Orff and Kódaly in its scope and objectives, since it focused mainly on the skills of execution and focused on the violin.

Suzuki speaks of the ability of children to learn their mother tongue easily and quickly at an early age can also be exploited for the teaching of instrumental skills from an early age (Hardgreaves (1988) cited in Pascual (2006)), however, there are methods that better develop musical intelligence.

As for musical talent, the existence of child prodigies in the world of musical art, such as Mozart, is recognized, but reference is made to the talent and practice going hand in hand for the development of the art professional.

An important part of Music Education plays the psychology of music, which has attracted the interest of various researchers and presents many approaches to its study. The topics that receive the most attention from Early Childhood Education teachers are:

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> ... the development of musical abilities, the psychology of musical behavior (which investigates the mental processes that are put into play when listening to or performing music), evaluation and psychometric approaches, the various variables of the educational situation, theories about the relationship between music and the brain, as well as its influence on learning and especially the studies of evolutionary development. (Pascual, 2006, pág. 66)

Of the fields that have been investigated the most, we can talk about the rhythmic sense, this because of the relevance it presents in education. Rhythm manifests itself in the first years of life through movement and speech; in the face of certain stimuli, which, when lacking, must be interpreted as a sign of irregularity in the baby's development, the rhythm is a motor response of the infant.

Similarly, psychology applied to music conducts research in the field of brain-music connections, where it is presented as the main task to establish how music stimulates the intellect and favors the teaching-learning process, if there is within the brain any area that is related to musical activity and creativity, as well as whether there is a difference between the brain of a musician and the rest of the people. Nowadays and from the pedagogical it is recognized that the teacher adopts different teaching strategies, which, in addition, are subordinated to the learning style of children, this is because modern theories indicate that a well-balanced entity makes both cerebral hemispheres work indistinctly and that the left side is more related to linguistic functions, meanwhile, law is more linked to creativity and emotions.

On the other hand, the question has also been raised whether musical skills and attitudes have any direct relationship with the sex of children; there are two conflicting opinions, the first defended by Bentley who argues that it does not directly influence the sex of a child, from the psychological point of view, to determine musical abilities, while Despins (1984) states that this aspect determines the domain of the hemispheres of the brain and that therefore if it conditions musical learning,"... girls have greater dominance of the left hemisphere, so they work the musical works in a more methodical and meticulous way at the technical level..." (Pascual, 2006, pág. 70)

The development of musical abilities can be enlisted in different stages of the infant cycle, which are not exempt from the complexities of learning and the social situations in which the infant develops. The stages are:

- Cycle I: from 0 to 1 year, at this stage the child reacts to sounds. From 1 to 2 years old, he makes music spontaneously; from 2 to 3 years begins the playback of phrases from songs you listen to.

- Cycle II: from 3 to 4 years, conceives the general plan of a melody; he could develop the absolute ear if he studied an instrument. From 4 to 5 years old, he begins to distinguish height registers and to reproduce simple rhythms by imitation; from 5 to 6 years old, understands strong/soft and understands simple melodic patterns.

It is necessary that in each of these stages the psych pedagogical characteristics presented by the infant are visualized and taken advantage of by the teacher for a greater benefit in instruction.

In the last century, relevant changes were recorded in all social spheres of human life; technology, which also evolved by leaps and bounds, impacted every aspect such as religion, culture, philosophy and the arts just to name a few.

Of course, these changes brought about by technology also affected the way education was conceived. During the year 2020 and so far in 2021, Educational Technology (TE) has become present for the development of the teaching-learning process, all this caused by the health situation that the world is experiencing due to the COVID-19 pandemic.

When performing a search on the conceptualization of, what is Educational Technology? There are different opinions, however, one with which those who subscribe identify is the proposal by González and Flores (2020) who state that "... is the evolution that integrates means of communication and methods of instruction that are used in the educational field to provide practical tools that are useful for learning". (pág. 15).

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It is not simply the use of certain technological tools within a class, but it requires a design, an analysis, a methodological approach and the correct use of learning theories, which according to Cabrero (2003), the most related to the use of TE is the behaviorist.

As a science, Educational Technology presents a design that contains a methodological training and is aimed at solving problems by offering tools for the development of quality learning and its usefulness is observed in the same way in the commitment and actions that are carried out in a period of time where the fulfillment of an objective is carried out, technology being a determining factor; In the words of the pedagogue Sosa, (2020) the irruption of the TE in the teaching-learning process modifies the pedagogical processes and the role played by the teacher.

New models of teaching and learning have been born thanks to Educational Technology, being during the health situation of the last year the e-learning used by teachers to carry out such commendable work, which is why there is an evolution in digital communicative, pedagogical and research skills.

The pedagogue Barroso (2006) conceptualizes about educational modality and exposes that it is the way in which an educational product is presented that requires administrative processes, planning of learning strategies and didactics. In this sense, he comments that e-learning, also known as "distance learning", is a model based on self-taught training where most of the responsibility falls on the student and whose main characteristic is the use of ICT inserted in high quality pedagogical designs, generally through virtual learning environments, which allows the academic improvement of all those people who wish or require it.

A fundamental aspect in the good performance of the educational process through-learning is the Instructional Design (ID) being a fundamental part, this helps the planning of the course and recommends the direction, actions and tools that can be used in the development of the lessons having as a central axis the learner and the forms of teaching.

For the development of the DI, the ASSURE model (for its acronym in English, *Analyze learners; State Objectives; Select media and* materials*; Use media and* materials*; Require learner participation and* Evaluate and *revise*); it should be considered that we work with children and one of the benefits of this model is its ability to adapt to the needs of the course taking as a central axis the students.

The development of the course begins by analyzing the students, who are studying the infant level of the Bachelor of Music with emphasis on instrument offered in the Academic Unit of Arts of the Autonomous University of Zacatecas (UAAUAZ) and present the corresponding ages between eight and ten years, they are students who come from a municipality where traditional and folk music is very present.

It is necessary to take advantage of for the good evolution of the course all the skills and abilities that the infant presents, as well as the knowledge that he demonstrates to possess with respect to music, this will facilitate the understanding, obtaining and improvement of the competences that must be achieved during the semester.

To achieve the goals set by the teacher it is necessary to know the learning styles of the students, as already mentioned above and highlight Becerra, Martín & Bethencourt (2021), children learn better through play, this facilitates the equal coverage of styles such as: auditory, kinesthetic, visual and reading writing, covering all the learning abilities offered by the student.

It is time to establish the objectives to be achieved during the course. According to Pascual (2006), during children's musical teaching it is necessary to work on the contrast of registers, treble-bass, knowing how to identify voices, objects and instruments that can emit sounds in the registers already mentioned "... Musically, the timbre gives rise to various formal arrangements in which timbral, vocal and instrumental contrasts can be observed." (pág. 18) Another knowledge that must be acquired at this stage are the rhythmic elements such as pulse, accent, rhythmic cells, duration, among others, the difference between fast and slow, short and long or strong and weak.

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Once the competences to be achieved during the semester have been established, the materials, resources and means with which to work are established, for which three fundamental elements are considered: the choice of available materials, the need to edit or modify existing materials and / or resources, as well as the creation of new ones.

It does not stop insisting on the importance of the game in the teaching-learning process during Early Childhood Education and naturally in the teaching of music at this stage should not be the exception, so the materials and resources used during the process must have a playful approach, looking at it from the didactics; it is recommended to use videos that contain musical games, which are stories where theoretical knowledge is taught; music game books accompanied by podcasts and audios, among others. The complicity of parents, guardians or any family member is necessary for the development of the class or home study, this will motivate the infant to learn and will feel sheltered during the process.

One of the resources that were used by the teacher is the software "Gcompris", in its demo version, which allowed the transmission of knowledge and the development of activities in a playful way during the distance course.

Once the search and discrimination of materials and resources has been completed, it is necessary to plan the activities to be carried out by the learners in practice and in which the means previously established will be used.

In this phase is where the means and materials previously prepared are used, which once again must be specified, must be as clear as possible and always with a playful didactic, Pitt and Clark cited in Williams, Schrum, Sangrà, and Guàrdia (2004) expose that in the first instance it would be appropriate to take strategies that are used in the face-to-face class and that can be easily adapted to online instruction.

Also, a fundamental part during this process is the programming and realization of dissimilar types of activities that encourage the participation of students as the center of the process. Activities that are recommended to be carried out in the eight- to ten-year stage may include the following:

1. The reproduction of classical, children's, traditional or folk music, and the expression through drawing and the use of the imagination of what the child feels while listening.

2. Walk in circles or clap marking the pulse or accent of the music being heard.

3. Recognize the strong and weak (dynamic) contrasts of the song being played. This exercise can be performed by guiding yourself by stretching wanting to touch the sky or ceiling if the sound is loud and bending down if the sound is weak.

4. Recognize timbres and identify musical instruments; for this you can make use of games such as the musical lottery, accompanied by sounds of musical instruments for the infant to recognize which instrument sounds by selecting it on his board.

5. Recognize the different musical signs such as the key of G in the second line and the key of F in the fourth line, the musical figures, the silences, the musical notes in the keys, among others. A game through which the appropriation of musical signs is achieved is the so-called "Musical Domino" where chips or cards containing musical symbols are distributed, no more than ten cards per player, and each of these is placing the token that appears on the game board.

6. Another activity is the improvisation of rhythms with and without lyrics, making use of the metronome; to this activity can be added the elaboration of rhymes to make the game more interesting and, in addition, for the infant to relate words with the musical figures or combinations of these, making it easier to practice rhythms.

7. Recognize musical records: in a table, which may be in the student's notebook or proposed by the teacher on the board, place two columns one that is called high registry and the other low registry, and with the support of sounds, can be through audios and / or podcast, the register to which they belong must be identified.

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It is necessary to emphasize that the previously proposed exercises were carried out both in classes synchronously through videoconferences and at home in the hours of practice and study of the students and with the complicity of a relative, which could be verified through videos that were delivered to the teacher.

Also, to the activities are added the intonation of scales, songs and simple musical readings, all performed synchronously and asynchronously, with the support of materials and resources such as audios and videos, where tuning and rhythmic were practiced.

To finalize the INSTRUCTIONAL DESIGN MODEL, ASSURE, in its last phase, proposes the evaluation and review, where the entire course is valued, from the planning, its application, how effective or not the process, the means, materials and resources that were used were. "(E) Evaluate and review: Evaluate complete instruction with the application of instruments; objectives, methods, means and technology, use of materials, use of feedback." (De La Torre & Sosa, 2018, pág. 7)

In general, the evaluation process is only applied to establish the academic progress obtained by the apprentices, which according to Tapia (2020), causes the students to fall on the deficiencies and obstacles that arise during the teaching-learning process; it is worth clarifying that in early childhood music education the assessment of the course design is considered more important, which allows the teacher to improve it taking into account the moments where there was greater complexity for its development.

From the methodological point of view, the evaluation can be carried out in three parts: the performance of the students, the evaluation of the means and materials, and the evaluation of the teacher. It is recommended to consider during all phases the assessment of the process.

Regarding the evaluation of the performance of the students, it is necessary to emphasize once again that the methodological and didactic work with the students of the infant level must be carried out from and through the game, so it is proposed the use of some activities such as those described above to evaluate.

On the other hand, during the development of the course, systematic evaluations were made whose usefulness provided significant data to assess the appropriation of knowledge and skills by the students.

As for the assessment of the application of the course was made through a session of questions to the students, carried out synchronously, where with the use of images of a happy face and a sad one, they expressed how they felt during the course; In the same way, through an online form those who supported the students during the process were involved, they expressed their opinion on the development of the semester, their strengths and weaknesses, to conclude, and through another form, the teachers of the students were included who explained how effective the teaching-learning process was in the subject of Solfeggio for the student and how it impacted on the development of the instrument class.

Conclusions

Those who subscribe have concluded that music education at the infant level has proven to be fundamental for the progress of children, positively influencing their social, intellectual and psychomotor development, which have shown, in general, greater capacity for learning and concentration in their academic procedure.

A series of adjustments were made to the instructional design, taking into account the level to be taught and the exhaustion that can be generated by taking distance classes in the infant cycle, in order to preserve the health of the infants and that they spent the least amount of time possible fixing their eyes on a computer or a cell phone in synchronous activities such as videoconferencing and that in turn the asynchronous activities served to continue the academic evolution of children.

The opinions and feelings of the students, those who supported them and the instrument teachers who worked with the members of the group to improve and refine the subsequent courses, resources, tools and means used during the instruction will be considered.

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The TE has been a great ally in the teaching-learning process during the pandemic caused by COVID-19; which allowed to continue with the process in children's music education, served to solve an emergency situation, however, it is reflected that despite the advantages shown in other areas of education the distance model should not replace the face-to-face model in the Early Childhood Music Education class, moreover, it is considered that a mixed model would be much more profitable.

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ISSN-2523-0336

[Title in Times New Roman and Bold No. 14 in English and Spanish]

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Abstract (In English, 150-200 words)

Objectives
Methodology
Contribution

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Objectives
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Contribution

Keywords (In English)

Indicate 3 keywords in Times New Roman and Bold No. 10

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Citation: Surname (IN UPPERCASE), Name 1st Author, Surname (IN UPPERCASE), Name 1st Coauthor, Surname (IN UPPERCASE), Name 2nd Coauthor and Surname (IN UPPERCASE), Name 3rd Coauthor. Paper Title. Journal High School. Year 1-1: 1-11 [Times New Roman No.10]

* Correspondence to Author (example@example.org)
† Researcher contributing as first author.

Introduction

Text in Times New Roman No.12, single space.

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.

Development of headings and subheadings of the article with subsequent numbers

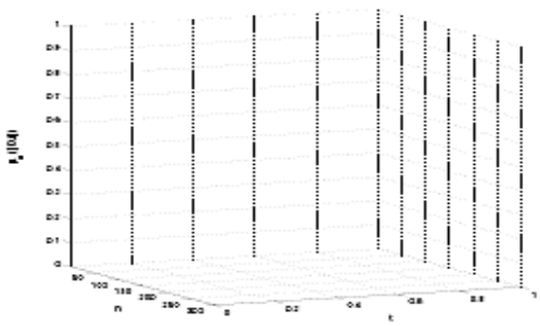
[Title No.12 in Times New Roman, single spaced and bold]

Products in development No.12 Times New Roman, single spaced.

Including graphs, figures and tables-Editable

In the article content any graphic, table and figure should be editable formats that can change size, type and number of letter, for the purposes of edition, these must be high quality, not pixelated and should be noticeable even reducing image scale.

[Indicating the title at the bottom with No.10 and Times New Roman Bold]



Graphic 1 Title and *Source (in italics)*

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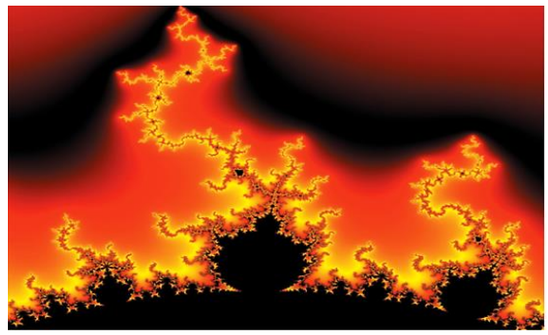

Figure 1 Title and *Source (in italics)*

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Table 1 Title and *Source (in italics)*

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Each article shall present separately in **3 folders**: a) Figures, b) Charts and c) Tables in .JPG format, indicating the number and sequential Bold Title.

For the use of equations, noted as follows:

$$Y_{ij} = \alpha + \sum_{h=1}^{r} \beta_h X_{hij} + u_j + e_{ij} \quad (1)$$

Must be editable and number aligned on the right side.

Methodology

Develop give the meaning of the variables in linear writing and important is the comparison of the used criteria.

Results

The results shall be by section of the article.

Annexes

Tables and adequate sources

Thanks

Indicate if they were financed by any institution, University or company.

Conclusions

Explain clearly the results and possibilities of improvement.

ISSN 2523-0336

References

Use APA system. Should not be numbered, nor with bullets, however if necessary numbering will be because reference or mention is made somewhere in the Article.

Use Roman Alphabet, all references you have used must be in the Roman Alphabet, even if you have quoted an Article, book in any of the official languages of the United Nations (English, French, German, Chinese, Russian, Portuguese, Italian, Spanish, Arabic), you must write the reference in Roman script and not in any of the official languages.

Technical Specifications

Each article must submit your dates into a Word document (.docx):

Journal Name
Article title
Abstract
Keywords
Article sections, for example:

1. Introduction
2. Description of the method
3. Analysis from the regression demand curve
4. Results
5. Thanks
6. Conclusions
7. References

Author Name (s)
Email Correspondence to Author
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Journal High School

2523 0336
ISSN 2523 - 0336