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The works must be unpublished and refer to topics of methodology, sociology of education, language and culture, history of education, adult education, language science, compared education, special education and other topics related to Humanities and Behavioral Sciences
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Presentation of the content

In the first article we present *Popular music, history and geography of our society: a pedagogical approach for students* by MENDOZA-ZAZUETA, Juan Enrique & ÓSCAR-ÁVILA José Melchor with adscription in the Universidad Autónoma de Sinaloa, in the next article we present *Emotional competences relationship and academic performance in university students*, by ALONSO-ALDANA, Ruth, GAYTÁN-MARTÍNEZ, Zulema, FLORES-REYES Alfonso and TOLANO-GUTIÉRREZ, Helga Karina with adscription in the Universidad Tecnológica del Sur de Sonora; in the next article we present *The BigBlueButton in teaching- learning processes, invironmental education in ecotecnologies for sustainability* by GALINDO-GONZÁLEZ, Leticia with adscription in the Universidad de Guadalajara, in the next article we present, *The empathy during the training of the dentistry at the Universidad Autonóma de Sinaloa* by LÓPEZ-PÉREZ, María Carlota with adscription in the Universidad Autónoma de Sinaloa.

Content

Popular music, history and geography of our society: a pedagogical approach for students

La música popular, historia y geografía de nuestra sociedad: un enfoque pedagógico para los estudiantes

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Abstract

The present work seeks to determine popular music as an object of study before the cultural interconnections given by globalization and, at the same time, presenting the musical field as a pedagogical tool for education. Through a project by researchers at the Autonomous University of Sinaloa, a pedagogical methodology that provides the student with tools necessary for an understanding from the regional to the global of the object of study is weighted, this being the musical field or any other object of which music can serve as a tool for the acquisition and understanding of knowledge. It also proposes the construction and protection of documents that help shape our history, understanding that intellectual operations encompass both languages and multiple discourses as well as artistic expressions in general.

Popular music, musical pedagogy, regional music, teaching

Resumen

El presente trabajo busca determinar a la música popular como objeto de estudio ante las interconexiones culturales dadas por la globalización y, al mismo tiempo, presentando al campo musical como una herramienta pedagógica para la educación. A través de un proyecto por parte de los investigadores de la Universidad Autónoma de Sinaloa, se pondera una metodología pedagógica que proporcione al estudiante herramientas necesarias para una comprensión desde lo regional a lo global del objeto de estudio, siendo este el campo musical o cualquier otro objeto del cual la música pueda servir como herramienta para la adquisición y comprensión del conocimiento. Asimismo, se propone la construcción y protección de documentos que ayudan a dar forma a nuestra historia, entendiendo que las operaciones intelectuales abarcan tanto los lenguajes y los múltiples discursos como las expresiones artísticas en general.

Música popular, pedagogía musical, música regional, didáctic

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Introduction

Art education in students at different school levels is, today, a part that is becoming more substantive in school life, is to think in an intellectual, social, professional and spiritual aspect, in a harmonious, balanced relationship that favors the individual a possibility to approach and establish a new relationship with his society, community, reflective or inclusive.

Thus, our country is in transitions of the political, economic, social and cultural orders. But all these changes have permeated social consciousness, in the cultural sphere, that is, in what is known as popular culture, what Mikhail Bakhtin analyzed, in his most influential work written in 1941, Popular culture in the Middle Ages and in the Renaissance: the context of François Rabelais, in this text we can see that carnival and bufo world, as opposed to a normative world, with a rigidity of pre-established artistic patterns and styles, thus the other discourse is broad and polyphonic, born of artistic and folkloric manifestations that come directly from a system of values and traditions of the people. Following on these lines, the term popular music, first used in 1573, is conceptualized, encompassing a variety of styles that are associated with different groups and social classes (Pérez-Aldeguer, 2014). Seen in this way, popular music fosters intercultural competence, as it is a transversal axis, which in the educational field fostered a new relationship of its society based on knowledge, from this point of view, in relation to other societies.

While the importance of education, art, and music in particular has been seen for years as a substantive part, at least that is what we can observe World Conference on Education for All held in Thailand (UNESCO, 1990) , the so-called inclusive education was generated, giving popular music a degree of importance to achieve that proposal, contextualizing it since then, but its growth in relation to other areas such as science, technology, communication, has been much less, although World Conference on Higher Education, since 1998 (UNESCO) encouraged the search for new ways of distributing knowledge, in an effort to encourage countries around the world not to fall behind, which could carry a high cost, a year later, Talks about inclusive education, progress on these issues has been less.

Various studies such as that of Anne Bamford, (2006), The Wow Factor: Global research compendium on the impact of the arts in education, support the qualities that on social inclusion foster music, hinting at the different types to which it refers inclusion is to say religious, racial or social class.

Other studies talk about the musical experience and the way in which it generates a synergy between teachers, students and parents, in this way it ceases to be an object to transform itself into an experience that facilitates social inclusion (Frith, 1987). With which the strength of educating through and from the musical is accentuated, accentuating from listening, singing, interpretation, creation, and corporal expression, to name a few.

It will be during the time of Vasconcelos at the head of the Ministry of Public Education, 1921-1924, where his project is based on thirteen founding axes, which were, education, fine arts and books as trainers in the field educational of the individual, it was in that period in which an attempt was made to give a training made up of the member who will converge the student from what is expressed in science and art, outside of that period our country found in a constant justification, "In In the cultural field, some ideological elements of the state apparatus have acted vastly, elements that are thus perfected, stabilized or deteriorated in the broad period 1917-1975, continue to lead substantially to the same thing: progress as justification and ultimate meaning of Mexico "(Monsivais, 2000).

Thus, in the field of professional arts, ruptures, rejections, justifications have been generated, establishing relationships that sometimes focus on the sense of identity and exacerbated nationalism, as in the case of the 1950s, or an innovation and openness that is more well it remains in a whirlpool that could not be capitalized and only remained in an idea, so we reached the '80s a new mentality, all because of a new relationship with the knowledge of the individual, but that was conceived in a cultural relativism that also failed consolidating this integral idea, the neoliberal policies of the 90s, only generate the cultural aria to move away, although on the other hand the folkloric has been exacerbated, but seen only as a nationalist, identity, impressionist ebb, and not as an emanation of the popular, but as a stratification of an exportable use of a past photograph of our society, thus during that decade and the following one the debate was m It mixes with globalization and appears "a universal consumer capable of deciphering advertising messages and even demanding contractual satisfactions beyond national jurisdictions" (Bolán, 2002). With which the positions that have been marked for years are accentuated, one that looked towards cultural localisms, regionalisms, in search of acceptance and legitimation, and another marked by authoritarianism and paternalism.

Music education is a pending subject, in a study carried out by Ortiz Molina (2011), it opens a series of questions in which we observe a distinction between the general musician and the music specialist, the latter seen as those who had an education Classical musical, that is academic, which causes a gap to be generated between one and other teachers, emphasizing what is valued academically with greater prestige, leaving aside the possibility of giving access to other forms of popular music understand and understand other musical practices, which are anchored in traditions, beliefs and values in relation to time and place, thus having a means of social and cultural involvement, opening a manifestation within the framework of a human context in which it arises already exists (Tejada, 20104), thus achieving an approach from another position to the object, thus uniting the environment of my music with the music of other cultures, and observing the intercommunication that in a temporary evolution has been taking place, with which the individual expands at the same time as concrete a global panorama uncertain in its regionality.

Expanding this spectrum leads us to observe horizontally and vertically the forms, uses and customs that are used in the research, study, pedagogy and teaching of popular music in our country, as well as the value that is given to it in different verticalities of is that make up the society in which the individual develops, we think like Hernández bravo (2011) that they are necessary to develop a series of "cognitive, affective and practical skills necessary to function ... in an intercultural environment" (54). With which, it contributes to an understanding from the execution of other practices and forms. Closing gaps from a specialization, and understanding the popular not in derogatory terms, but as a substantive part and a product of expression of our culture, which opens up various techniques and methods to approach and know that universe. Emphasizing the deepening that students acquire in the knowledge of artistic languages and practice it regularly, this in order to integrate attitude skills that involve their thinking (SEP, 2006). The training involves an interweaving of two, leaving aside an empirical skill learned, to generate a series of elements that can lead step by step in a degree from less to greater complexity and deepening of knowledge about the object being studied, make use of of new technologies, contextualize the need and use of these elements in the current educational environment, as mentioned by Díaz (2005) in his study Musical education at school and the European Higher Education Area, which allows us immediate access , unique in relation to other historical moments, of the produced, of the productions and of the information that on the popular in relation to music is developed in the world. In the same way, in Espigares' doctoral thesis (2009): Music education with ICT for secondary school: evaluation of an educational-musical knowledge management model, (the Bourbon model), states that: The music education model With ICT that it poses as work, it produces an impact on the emotional aspect of the subjects, as well as on their musical skills and competences. In the Bourbon model, it benefits from the possibilities and advantages offered by music science in general, and music education in particular, as referred to in the theoretical section of this research, values, learning and skills are developed musicals in the students, which enhance respect and collective enrichment in their human relationships, something essential in this educational stage, to contribute to the development of their capacities and comprehensive training.

In addition to what has already been commented in works such as that of Galera (2010) where he alludes to the importance of computer technology in relation to cognition, assistance, for the understanding of the sound-symbol in the musical field, which now intermediate stages, adds to the above the work of Montesinos (2010) The Specialist Teacher: Initial musical training and Praxis of School Musical Education, comments that the relevance of his study consists in knowing its impact on the effectiveness of the educational act in some side effects to the development of the curriculum. He makes special emphasis on the context, where it is carried out, the educational process and what are the real infrastructures for teaching the subject, as well as his assessments of the type of music education that is taught in educational centers. The question arises, whether from music teaching, different practices were generated, the factors that influence the teaching-learning process. It also seeks to explain the impact of music education, and its teachers, and whether they are sufficiently valued by educational institutions, as well as knowing what degree of satisfaction the specialist teacher achieves when developing his teaching practice.

The intention of this project Popular music, history and geography our society: a pedagogical approach for students, is to analyze the positions on popular music at the regional level, throwing lines at the global level, to find the cultural interconnections that have nurtured in the musical field ponder a pedagogical methodology that in an organized way can provide the student with the necessary tools to have a global and total understanding of the object being studied, as well as build and protect documents that help shape our history, understanding that intellectual operations encompass both languages and multiple discourses such as artistic expressions as a whole, the techniques and practices that comprise it.

Problem statement and justification

Our university, the Autonomous University of Sinaloa, is aware of the changes that are coming and as a precept or fundamental axis is at the same time as the educational and the cultural, observes that this is an identity trait and that it has a value in the regional and therefore an impact towards the national and universal, proof of this is the solid presence that our so-called regional music has in the world, to which must be added the achievements that the academy has had, or that other musical works have had, music is an instrument of the state, of a nation, it is an indelible photograph that goes beyond its state to form an identity. Hence, our interest in specialization, our interest in reflecting on this object that, having it so close at hand, seems to be known, but it is an intention of the academy, it is its duty to study it, think about it and respond to it. the problems and criticism that it brings, music is seen as an accessory in some educational programs, and not as what can contribute to the educational field.

It is the obligation of the universities, as one of the privileged spaces for the creation of knowledge, to participate proactively effectively in the reflection of these new educational paradigms. Our university has generated lines that help strengthen and consolidate this approach.

The didactic aspect of art, which allows organizing and interpreting the various positions that underlie it, observing "the different plots of human knowledge, in what refers to the artistic field, quantifies the meanings, reasons and intentions of the subject who performs the action, does not clarify much when it comes to understanding the changes caused in the producer. This action must be interpreted and understood, and based on that knowledge, propose new didactic learning situations, if desired "Mollá Giner (1994), that is, integrate and train the student with a capacity for analysis based on objects that are presented so that he can discern and find connection points that lead him to consolidate knowledge based on a particular expression.

But the same that can be extra populated in a transversal way to other school disciplines, and then stop being an accessory to become an educational tool that can favor abstract and theoretical processes, "music contains skills that are present in different subjects and therefore, if we are aware of this, we can facilitate the access of students to globalized content (Reyes, 2011).

Experiences from other countries can be extrapolated to our society, with its exceptions in economic lag, Cuba has managed to consolidate an educational development above many Latin American countries, in turn consolidating the union of the so-called basic subjects and those of an artistic nature, that is, a public policy focused on a comprehensive, inclusive, global education. It is our intention to think about these pedagogical models, give an answer, what are the market needs they are looking for and their internal potential (Moreno, 2010). Do not succumb to the pressures of globalization, rather take strength from them to generate a new proposal that unifies the various positions in the political, economic, social, and so on. Educational policies have to become the target of impacts from abroad, the establishment of a socio-institutional educational framework, which seeks to adapt and contribute to the formation of a new techno-productive paradigm, managed through a neoliberal educational vision, granting Thus, financial support to promote pedagogical and academic models, with a business cut-off called by competencies, for the different levels of the national educational system.

Continuing with Moreno (2010) the IES, in their educational policies led to the socio-institutional framework, to a triple convergence:

– Training in professional, investigative and managerial competences, supported epistemologically, in the constructivist methodology.

– The notion of training for the knowledge society, knowledge economy and human capital, today converted into digital capital.

– The management of organizational change, and the academic legitimization of HEIs, to adapt them to the new techno-productive model, which began as a structural adjustment in the eighties, was reinforced in the nineties and aims to overwhelm all the academic areas and levels of the system educational towards 2010-2020, by increasing and reinforcing its educational policy instruments such as; hierarchical organization, linking teaching with research and production systems of goods and services and diversification of financial sources, adopt the so-called third modernity which seeks excellence, effectiveness, efficiency, productivity, belonging, competitiveness, evaluation, performance, accreditation, planning, change management, use of new information and communication technologies, global learning networks, among others.

One of the problems we face is the statism in which the academy is in the field of music, it is necessary to propose a new order that addresses the various knowledge that compose it, that is, giving rise to the indigenous, peasant, technical, urban, to name a few. Within a dialogical perspective that promotes interculturality, not as a politically correct assessment of difference, but as a real space for exchange and intertextuality, which does not hide tensions and differences, but rather manages to make them explicit, to make they a fertile place. But also, to leave the gray and uncertain areas still, where cultures simply cannot be found (Samper, 2011).

It is necessary to implement policies that allow the dissemination and standardization of educational models according to the new socio-economy, which are also involved in the globalization processes in which the students are immersed, it is impossible, to be oblivious to it, a look must be achieved inclusive among the organizations involved.

In our state, music education has different ups and downs, there is no institutional policy in accordance with the new proposals mentioned above, policies that touch on the subject of education at different levels, science, sport and art education, not seeing this last as an accessory but as a substantive and formative integral part of the individual.

It is counted whether, in the governmental sphere with projects of symphony orchestras, choirs and youth choirs in our state, all this supported by the now Secretary of Culture, before the National Council for Culture and the Arts (CONACULTA), managed to implement the projects of orchestras symphonies, and children's and youth choirs in the state, another effort is also the Artistic Initiation Centers of the Ministry of Public Education, there are also three Bachelor's degrees in Music in our state, these with different accentuations and focused mainly on the practice of certain styles and genres, there is a long way to go it is necessary to integrate research into these centers, it is necessary to think about the how, in relation to music in our area, in our region, that manifestation that emanates from our people and that generates particularities harmonicas, drawing on a past and a present that interact in a live way in the phenomenon, but that has not been Reflected in its entirety in a systematic way and more, made available to our educated as an intangible part of their information society's understanding of a construct of thought. Thinking about pedagogy and music as a tool, as a substantive part in the development of the student, permeates our society, as a reflection of the interrelationships established by the different cultures that have and inhabit our region, the human vocation is privileged over the artistic one , consider it a methodological tool at the service of learning. Include performing art as for its analysis and study, strengthening the writing, logical reasoning and identity skills. In other words, from a critical liberal and social progressive trend (García-Huidobro, 1996).

Hypothesis

There is no pedagogical system, a didactic guide, an investigation that on the aspect of popular music can generate the interrelationships of the regional and the global, which has led the programs to focus mainly on practice, but it is deprived of the interrelationships that can nurture it, we think that it is through the analysis and knowledge of these relationships that the student is able to acquire and develop their inductive, deductive tools and a criterion on the object. It can also be a participant in the constitution of and its cultures, from the observation through the object of other manifestations in other cultures, with which it can come to establish a criterion on themes, region, globalization, violence and identity.

Objective

Our project "Popular music, history and geography our society: a pedagogical approach for students" proposes us to analyze and explain the various positions on popular music that exist, joining this to the concept of globalization, based on a methodology that goes from the quantitative in terms of the specificity of influences, areas, populations, generations, styles, and all this in a qualitative reflection that helps us to build a thought on the various realities in a temporary evolution. That is, finding the cultural interconnections that have nurtured in the musical field ponder a pedagogical methodology that in an organized way can provide the student with the necessary tools to have a global and total understanding of the object being studied, as well as build and safeguard documents that help shape our history, understanding that intellectual operations encompass both languages and multiple discourses and artistic expressions as a whole, the techniques and practices that comprise it.

Methodology

It is in our interest in this research to approach education reality from very different perspectives, in addition, to be able to use among many research models and choose different techniques, depending on the approach through which it is intended to make an interpretation of social and educational reality, therefore, it is to be expected that different answers will emerge to the questions asked. The authors who in recent years have contributed, with numerous publications of great influence in the community of social and educational researchers, tending to spread a vision of approaches to social research, based on the Kuhnian concept, of paradigm are: Guba, Denzin and Lincoln. In Mexico, concern for paradigms was strongly introduced in official educational discourses and research in the 1980s. The representative work of that time can be named the one coordinated by Dendaluce (1988). Methodological aspects of educational research, and specifically the contribution of the Spanish researcher De Miguel (1988), paradigms of Spanish educational research.

The field of educational research has been identifying a series of research paradigms, characterized by the responses that its defenders offer to three basic questions, which are related to the object of knowledge or the reality that one wishes to study.

These questions can be linked to the following dimensions according to (Lincoln, 1990): The Ontological Dimension, The Epistemological Dimension and the Methodological Dimension.

The dimensions will help us to generate a complete panorama, our methodological approach will be mixed, quantitative and qualitative, as mentioned by Hernández (2014), throughout the history of science, various currents of thought have emerged (such as empiricism, dialectical materialism, positivism, phenomenology, structuralism) and various interpretive frameworks such as realism and constructivism, which have opened different routes in the search for knowledge. Both approaches employ careful, methodical, and empirical processes in their effort to generate knowledge, so the previous definition of the research applies to both equally. A mixed approach helps us with the set of systematic, empirical and critical research processes, and involves the collection and analysis of quantitative and qualitative data, as well as their integration and joint discussion, to make inferences as a result of all the information collected, (meta inferences), and achieve a better understanding of the phenomenon under study (Hernández and Mendoza, 2008).

The mixed approach can be said to use evidence from numerical, verbal, textual, symbolic, and other data to understand the phenomenon of science. Chen (2006) defines them as; The systematic integration of the quantitative and qualitative methods in a single study in order to obtain a more complete picture of the phenomenon, and points out that these can be combined in such a way that the qualitative and quantitative approaches retain their original structures and procedures, (pure form of mixed methods); or that these methods can be adapted, altered or synthesized to carry out the research and deal with the costs of the study, (modified form of the mixed methods).

For Hernández (2014) the mixed investigation process contains:

Fundamental definitions:

– Rationalization of the mixed design.

– Decisions on: a) which instruments will be used to collect the quantitative data and which, for the qualitative data.

– b) the priorities of quantitative and qualitative data and analysis.

– c) the way in which different types of data are going to be transformed, associated and / or combined.

– e) method of analysis in each process and stage.

– Decision on how to present the results inherent to each approach and the joint findings.

– The investigation moves dynamically both in the facts and in the interpretation, in a cyclical or circular way, and that is increasingly different, since it depends on the variables and the subjects of each investigation. The foregoing is deduced by the way in which events cannot always be predicted or anticipated, that is, their course is not always linear, but rather multifactorial, so that the analysis of an investigation, from observation itself, must try to cover most of these factors in order to obtain results that are as close as possible to reality.

Given the case of the nature of this study, with this method, it is intended to know the reality in which the subjects develop, create their expectations for discipline, culture, and preferences.

Conclusions

The development of this project will generate a database on the study material of schools today. The study will also allow us to observe the understanding and appropriation of techniques and their relationship in social and cultural areas, taking popular music as the axis. In this way, the project is related to the two educational levels of the Autonomous University of Sinaloa, and its impact in terms of the construction of identities, analysis and understanding and it also strengthens understanding and analysis, which benefits several top-tier schools in relation to the income capabilities of students. Likewise, what is the reception of the proposed topics and be part of the Department of Documentation and Research of Music in Sinaloa, as well as the review and analysis of current educational programs that are already in the upper middle system, such as those of the level superior in the areas of Humanities and Social Sciences.

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Emotional competences relationship and academic performance in university students

Relación de competencias emocionales y rendimiento académico en estudiantes universitarios

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Abstract

The objective of this quantitative study was to identify the level of EI in the university student and to compare it to their academic performance. The 40 participants; 15 women and 25 men, aged between 18 and 22 years old, attending the Higher University Technical level, were selected through a non-random sampling. The Trait Meta Mood-Scale self-report test (TMMS24) was applied. Data were analyzed with the Spss 24 statistical program and the Pearson correlation test. The results show that there is no significant correlation between academic performance and global emotional intelligence, but, there is a significant difference in the variable of emotional clarity in young people in the first four-month period (3.70). They present a greater clarity compared with those in the fourth quarter (3.24). It is concluded that to study the relationship between EI and academic performance it is convenient to consider other variables that can influence the person, such as personality traits and intellectual capacity. Also it is recommended to include emotional competencies in the university curriculum, because they influence subsequent psychological adjustment and work performance.

School performance, Emotional intelligence, Student

Resumen

El objetivo del presente estudio cuantitativo, fue identificar el nivel de IE en el alumno universitario para relacionarlo con su rendimiento académico. Los 40 participantes, 15 mujeres y 25 hombres, con edades entre 18 y 22 años de edad, cursan el nivel Técnico Superior Universitario, fueron seleccionados a través de un muestreo no aleatorio. Se aplicó el test de autoinforme Trait Meta Mood- Sacale (TMMS24). Los datos se analizaron con el programa estadístico Spss 24 y la prueba de correlación de Pearson. Los resultados muestran que no existe correlación significativa entre rendimiento académico e inteligencia emocional global, pero, si existe diferencia significativa en la variable de claridad emocional, en los jóvenes de primer cuatrimestre (3.70) ellos presentan una mayor claridad comparándolos con los de cuarto cuatrimestre (3.24). Se concluye que para estudiar la relación entre la IE y el rendimiento académico es conveniente considerar otras variables que pueden influir en la persona, como los rasgos de la personalidad y la capacidad intelectual. Asimismo, incluir en el currículo de las universidades las competencias emocionales, porque influyen en el ajuste psicológico posterior y el desempeño laboral.

Rendimiento escolar, Inteligencia emocional, Estudiante

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Introduction

The 20th century is characterized by the rise and expansion of the term Emotional Intelligence (IE) and, as Goleman (1995) indicates, the union of reason and emotion is essential to understand the development of human intelligence. There are many contexts in which emotions, and the intelligent use of them, are necessary for the full development of the individual. But without a doubt, Emotional Competences (EC) play a very important role in the educational field. The above is accepted by researchers and educators (Hargreaves, 1996; Gardner, 2005; Goleman, 1996; Marina, 2004; Shapiro, 2010), cited in Del Rosal, Moreno & Bermejo 2018).

For Goleman (2000), a person who has a good level of IE will not necessarily master various ECs, since the first concept only indicates the potential that the person has for the use of inter and intrapersonal skills, "An emotional competence is a capacity acquired based on emotional intelligence that leads to outstanding performance" (Goleman, 2000, p.33). Therefore, the development of EI leads to emotional education, conceived as a continuous and permanent educational process, which aims to promote the development of the EC as an essential element of the integral development of the person, in order to train him for life, with the aim of increasing personal and social well-being (Bisquerra, 2003).

In EI two components are characteristic, closely related to two types of intelligences according to Gardner's Theory of Multiple Intelligences (2005), the intrapersonal component, related to the abilities for identification, perception and mastery of emotions in oneself, manifesting through self-awareness and self-control and the interpersonal component, linked to the capacities for identification and perception of emotions in other people (empathy) and the ability to relate positively in a social way (social skills). This author affirms that among the objectives of EI stand out the ability to know the emotions of the individual himself at the moment in which they arise; control and accommodation of one's emotions; recognition not only of our own emotions, but also the emotions of the people around us; the development of positive personal relationships, among many others (Del Rosal, et. al. 2018).

From the Mayer and Salovery model cited in Fernández & Extremera (2002), EI involves four major components:

– Perception and emotional expression: consciously recognize emotions and identify what the person feels and be able to give them a verbal label.

– Emotional facilitation: ability to generate feelings that facilitate thinking.

– Emotional understanding: integrate what the individual feels within their thinking and know how to consider the complexity of emotional changes.

– Emotional regulation: direct and manage both positive and negative emotions effectively.

Goleman (1995), defines Emotional Intelligence (IE), as the individual's ability to recognize his own feelings and those of others, to motivate himself and to properly manage relationships.

Goleman, cited in Fragoso (2015), conceives emotional intelligence as a set of key characteristics to successfully solve life problems, among which the following stand out: the ability to motivate oneself and persist over disappointments; control the urge to delay gratification; regulate mood; avoid disorders that decrease cognitive abilities; show empathy and generate hope.

Among the specific skills that make up EI (Pulido & Herrera, 2015, cited in Pulido & Herrera 2017) are included the skills of self-knowledge (accurate identification of own emotions), self-control (management of own emotions) and motivation (related to the driving impulse for the development of a task), empathy (ability to put yourself in the place of others) and social skills (adequate interaction with others).

Emotional intelligence in education

It is proven that academic intelligence is not enough to achieve professional success, nor does it guarantee success in everyday life. Intelligence does not facilitate happiness neither with the partner, nor with the children, nor with having more and better friends. People's IQ does not contribute to emotional balance or mental health.

Other emotional and social skills are responsible for emotional and mental stability, as well as social and relational adjustment (Fernández & Extremera, 2002).

Therefore, the educational focus has changed in the last decades. Expository teaching and receptive learning has given way to guiding teaching and autonomous and self-regulated learning (Peters, 2002, cited in Pedrera, 2017), whose purpose is the acquisition of skills. The concept of competence implies the ability and attitude to face complex demands and mobilize both personal and socio-cultural resources, integrating, understanding and adapting the subjects' own ends (OECD, 2005, cited in Pedrera, 2017).

For their part, Pulido & Herrera (2017) state that emotions influence academic performance in a key way, acting directly on learning. Any intervention within the educational field must be based on regularity and predictability, however, the emotional states that accompany this process cannot be eliminated. Therefore, it is proposed that, in order to achieve greater efficiency and quality in this learning, the emotional sphere is incorporated into the set of all those dimensions that intervene in said process. The reason is that when teaching incorporates emotions, the results are far superior to those obtained from that impersonal process and devoid of anything affective (Pacheco, Villagrán, & Guzmán, 2015). According to Gutiérrez, & García, (2015) affirm that the development of EI constitutes a slow learning process throughout life, which allows learning from experiences, generating cognitive skills and generating EC that, according to Goleman (1995), thought and action are combined, undoubtedly the school context can be extraordinarily conducive to achieving such development.

Problem

Numerous studies have identified a relationship between EI and student academic performance (Brackett and Mayer, 2003; Buenrostro et al., 2012; Ferragut and Fierro, 2012; Figueroa, Yaceira, Rosero and García, 2012; Gil-Olarte, Páez y Castaño, 2014; Mestre, Guil and Gil-Olarte, 2004; Palomera and Brackett, 2006, cited in Del Rosal, Moreno, & Bermejo 2018), undoubtedly one of the components with the most influence on the academic performance of students is that of emotional regulation.

Students with high scores in IE tend to get better grades in the different subjects, due, in part, to the ability they have to regulate their own emotions, consequently, it will allow them to identify negative emotional states so that they influence as little as possible in their tasks and obtain the best results (Extremera & Fernández-Berrocal, 2013; Medrano & Trógolo, 2014, cited in Del Rosal, Moreno, & Bermejo 2018).

At the university level, academic performance is defined as the degree of achievement of the objectives established in school programs (Himmel, 1985, cited by Estrada, 2011). Academic performance is a measure of responsive or indicative abilities, which manifests what a person has learned as a consequence of an instruction or training process, and involves cognitive, volitional and emotional variables (Ariza 2017).

Intellectual and emotional development and academic performance are interdependent. Students with high IE tend to be more prosocial, have a high school performance and better behavior. Positive feelings and emotions can greatly increase the learning process; they can keep the learner on task and provide a stimulus for new learning. Likewise, behaviors such as dropping out of school, negative emotions, low performance, drug use and juvenile delinquency have been related to the absence of social skills (Serrano, 2006; Gil-Olarte et al., 2006; Kimbrough, 2008; Ruiz , 2008, cited in Segura, Cacheiro & Domínguez, 2015).

Emotionally intelligent students show better self-esteem, adjustment and psychological well-being, emotional and interpersonal satisfaction, quality of interactional relationships, social support, and less disposition to present aggressive or violent disruptive behaviors, as well as they present lower degrees of physical symptoms, anxiety and depression. All these skills increase the academic performance of students (Extremera & Rey, 2007, cited in Salcedo 2017).

When a series of difficulties are observed in the classrooms, such as poor academic performance, boisterous classes, poorly disciplined students, high number of absences, verbal and non-verbal violence between disciples, fights for insignificant events, crying and nervousness when presenting oral exams or presentations, some of these behaviors suggest a lack of one or more emotional skills.

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It is believed that, within the teaching strategies for the 21st century school, it is necessary to include the development of the emotional skills of the students, teachers and directors to give them the tools that facilitate communication and the development of the student learning process. (Segura, Cacheiro & Domínguez, 2015).

Extremera & Fernández-Berrocal, 2003; Jiménez, 2009, cited in Niño, García & Caldevilla, (2017) affirm that there is sufficient evidence of the importance of the state and emotional management in student performance, as well as the direct role of EI in the performance and well-being of This in the academic and social environment.

Considering the above, the following problem arises:

What is the IE level that the university student shows to relate it to their academic performance?

Therefore, the present work aims to:

Identify the level of IE in the university student to relate it to their academic performance.

Method

The present study is quantitative, it was carried out during the period September-December 2018, with a population of 40 students of first and fourth semester of the programs of Higher Technical University Level (TSU), of the educational programs of Industrial Processes (PI) , Marketing (MKT), Mechatronics (MA), Aeronautical Manufacturing (MAMP), Automotive After-sales Service (SPA), Industrial Maintenance (MI), Information Technologies (IT), from a University in southern Sonora. The sample was chosen for convenience through a non-random sample, consisting of 25 men and 15 women. Age ranges from 18 to 22 years.

Instrument

The questionnaire used has been the TMMS-24 self-report test, a reduced version adapted to Spanish by Fernández-Berrocal, Extremera and Ramos (2004) of the Emotional Meta-knowledge Trait Scale based on the Salovey and Mayer model (1990).

This instrument, made up of 24 items and a 5-point Likert-type scale, assesses three key dimensions in EI: emotional attention, related to the ability to feel and express feelings appropriately; emotional clarity, linked to the ability to understand emotional states and emotional reparation, oriented to the ability to reverse emotional states correctly.

To assess academic performance, the final average obtained by each student at the end of the semester September-December 2018 was used.

Procedure

The instruments were answered in the classroom, with the prior authorization of the students. Each application lasted around 10 minutes. The following instructions were given: mark with an X the degree of agreement or disagreement with each of the statements about personal emotions and feelings; it was clarified that there were no correct or incorrect answers, in addition, the reason for the work and its relevance were explained to the participants, and that the results would be used for research purposes.

Analysis of data:

Data processing was performed in the Statistical Package for the Social Sciences [SPSS] # 24, and the Pearson correlation test.

Results and discussion

Statistical results show that there is no significant correlation between academic performance and global emotional intelligence in students in the first and fourth four-month periods (Table 1 and 2). In this regard, Bastian, Burns and Nettelbeck (2005 cited in Del Rosal, Moreno, & Bermejo, 2018) also do not determine in their study with university students a significant relationship between these two variables. Similarly, Salcedo (2017), found that there is no direct relationship between IE variables and academic performance in university students.

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Variables	1	2
Academic performance	-	
Emotional intelligence	-.27	-
$p < .05*; p < .01**$		

Table 1 Correlations between academic performance and emotional intelligence of first-term students.

Variables	1	2
Academic performance	-	
Emotional intelligence	-.15	-
$p < .05*; p < .01**$		

Table 2 Correlations between academic performance and emotional intelligence of fourth semester students

In addition, the correlations between the academic performance of the students in the total sample were calculated, with each of the categories measured by the instrument (Table 3), observing that the correlations between academic performance and attention variables (-.15), clarity (-.16) and repair (-.07) are low. Also, it was shown that the correlation between academic performance and global IE is low (-.13). It is not significant (Table 3). On the other hand, (Gaeta & López, 2013) found that academic performance did not have a significant correlation with the dimensions of the EC and affirm that it may be because students do not show adequate levels in the regulation of their emotions that allow them to greater social and academic adaptation in the university, since it has been shown that the ability to use and regulate emotions in order to favor concentration, impulsivity and stress management, can produce an increase in the intrinsic motivation of students (Fernández - Berrocal & Extremera, 2006, cited in (Gaeta & López, 2013), which may favor their academic performance (Ogundokun & Adeyemo, 2010, cited in Gaeta & López, 2013).

Variables	1	2	3	4
Academic performance	-			
Attention	-.15	-		
Clarity	-.16	.33*	-	
Emotional reparation	-.07	.19	.59**	-
Global emotional intelligence	-.13	.64**	.82**	.76**
$p < .05*; p < .01**$				

Table 3 Correlations between academic performance, attention, clarity and emotional repair and global IE

Likewise, Table 4 presents a Student's t test for independent samples to find out if there are differences by semester (1st and 4th) in terms of IE. The results obtained show that there is a significant difference in the emotional clarity variable, in the first semester youth (3.70) they present greater clarity compared to the fourth semester (3.24). Del Rosal, Dávila, Sánchez, & Bermejo (2016), affirm that it is the university students in initial training who obtain the highest score in each and every dimension, as well as in the global level of emotional intelligence. For their part, Gaeta & López, (2013), regarding the EC of university students, observed high levels both in the perception and in the understanding of emotions, not so for their regulation.

Variables	First semester (n = 40)	Fourth semester (n = 40)	t	p
Emotional attention	3.19	3.26	-.30	.76
Emotional clarity	3.70	3.24	2.03	.04
Emotional reparation	3.87	3.61	1.17	.24
Global emotional intelligence	3.59	3.37	1.30	.19
$* p < .05$				

Table 4 Mean values to contrast differences in emotional intelligence by semester.

Conclusion

The objective of this work was fulfilled: Identify the level of IE in the university student to relate it to their academic performance and although the result showed that there is no significant correlation between academic performance and emotional intelligence, (Ferragut and Fierro 2012, Renault, Cortada and Castro, 2014, cited in Del Rosal, et al, 2018), believe that to study the relationship between EI and academic performance, it is convenient to consider another series of important variables that can influence the person, such as the characteristics of personality and intellectual capacity.

Jadue (2002, quoted in Gaeta & López, 2013) emphasizes the relevance of developing emotional competencies in students that contribute to their well-being and emotional balance.

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The regulation of emotions comprises the most complex group of competences, since it involves the management of emotional expressions of oneself and of others, the management of internal emotional states and the use of emotion in the planning and execution of plans.

Academic performance is not the only variable associated with professional success, prosperity, prestige, satisfaction and quality of life (Angarita Arboleda & Cabrera Dokú, 2000, cited in Páez & Castaño, 2015), since it has been found that EI may have a greater impact on this aspect, compared to academic performance (Marín Sánchez, Infante Rejano & Troyano Rodríguez, 2000, cited in Páez & Castaño, 2015). EI is linked to emotional control, the ability to negotiate (Petrides & Furnham, 2000, cited in Páez & Castaño, 2015), self-motivation, persistence, empathy and the quality of interpersonal relationships. Furthermore, it is a basic component in leadership, emotional stability and flexibility, adaptability and the management of frustration and uncertainty (Bermúdez, Álvarez & Sánchez, 2003, cited in Páez & Castaño, 2015); therefore, it can become a factor that predicts good performance in educational and work contexts (Bar-On, 2004, cited in Páez & Castaño, 2015).

According to Goleman (1996), emotional skills are more important for job success than intellect and technical knowledge, since they allow connections to be made between reasoning, emotional skills and coping strategies.

In short, there is sufficient evidence of the importance of the state and emotional management in student performance, as well as the direct role of EI in its performance and well-being in the academic and social environment (Jiménez, 2009, cited in Niño, García & Caldevilla, 2017).

Also, Páez & Castaño (2015) affirm that in the curricular designs of the universities, it is necessary to include not only the cognitive aspects but also the emotional and interactional aspects, also, all these aspects influence subsequent psychological adjustment and job performance. To a great extent, the social-emotional skills of perseverance and decision-making are fundamentally linked to the awareness and regulation of emotions (García, 2018).

Finally, it is recommended to contemplate from the institutional curriculum the importance of an emotional awareness, consider the need for its proper management, reinforce the relational capacity with other subjects and develop the capacity to solve problems; A first step will be to educate teachers about the importance of developing skills through literacy and improving emotional communication among students, which are so necessary for them in this social context in which they have been taught. touched to live as stated by Gutiérrez & García (2015).

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The BigBlueButton in teaching- learning processes, invironmental education in ecotecnologies for sustainability

La herramienta BigBlueButton en los procesos de enseñanza-aprendizaje, de educación ambiental en ecotecnologías para la sustentabilidad

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Abstract

The present article is a qualitative investigation of descriptive and documentary scope, which aimed to identify how the technological tool called BigBlueButton (BBB) influenced the online teaching-learning processes of six students who lived out of Guadalajara metropolitan area, and other states of the country.The results showed that students who resided outside of metropolitan area and other states of the country, who used the online technological tool (BBB), achieved a teaching-learning process that gave them knowledge and skills necessaries to develop their environmental education projects in Ecotechnologies, for sustainability in their locality.

Resumen

Se llevó a cabo una investigación cualitativa de alcance descriptivo y de tipo documental, la cual tuvo como objetivo identificar cómo la herramienta tecnológica llamada BigBlueButton (BBB), apoyó los procesos de enseñanza-aprendizaje en línea de seis alumnos que radicaban fuera de la zona metropolitana de Guadalajara y en otros estados del país. Los resultados arrojaron que los alumnos que residían fuera de la urbe y en otros estados del país y que se apoyaron con la herramienta (BBB) en una modalidad en linea, lograron proceso de enseñanza-aprendizaje que les aportó conocimientos y habilidades necesarias para desarrollar sus proyectos de educación Ambiental en Ecotecnologías para la Sustentabilidad en su localidad.

BigBlueButton, Ecothenologies, environmental education, sustainability

BigBlueButton, Ecotecnologías, Educación Ambiental, Sustentabilidad

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Introduction

Environmental problems continue day by day, it seems that the environmental deterioration that is generated is faster, than the strategies to mitigate it, in this sense different proposals have been carried out with the aim of contributing to lessen the environmental impact that is experienced , and above all, look for a Sustainable Development, which is defined as; Development that meets the needs of the present without compromising the ability of future generations to meet their own needs, (WCDE, 1978).

To achieve this type of development, there are many proposals, among them the use of ecotechnologies, which are defined by the Ecotechnologies Unit of the Ecosystem Research Center of the National Autonomous University of Mexico, Campus Morelia (2014), such as; Devices, methods and processes that foster a harmonious relationship with the environment and seek to provide tangible social and economic benefits to its users, with reference to a specific sociological context.

This is also how the "Santiago Mariño" Polytechnic University Technological Institute (2013) defines them, as a set of techniques, derived from some sciences, that integrate the fields of study of ecology and technology, seeking to satisfy human needs, minimizing the impact environmental through learning natural and social systems, adopting permaculture foundations, being holistic and sustainable development.

The practice of ecotechnologies are called ecotécnias, which are defined as; The technological innovations developed to preserve and restore the balance of the natural environment, as well as the sustainable use of natural resources for the elaboration of diverse products, services and materials for life, (Zarate, 2011).

Ecotechnologies involve a process of intercultural and interdisciplinary dialogue on the knowledge provided by professionals, and the knowledge that remains in the context of the communities or recipients of these different technologies, causing an impact in the context through the proper use of the natural resources and the generation of ecotécnias to improve the quality of life of the inhabitants García, (2013).

Likewise, eco-technologies represent a series of environmental benefits, both in the metropolitan area and in rural areas, such as; the improvement of soils, reduction of water pollution, use of solar energy as a source of electrical energy, or as a way of heating water for domestic use or the treatment of food for its conservation, these encompassing mainly satisfying four needs basic; water, food, waste and energy.

Ecotechnologies for energy use

The excessive use of energy has brought negative consequences for the environment, both for its use and for the ways in which it is obtained. Among these consequences is global warming, which today confronts us with a visible environmental crisis.

Faced with this problem, it is necessary to think of other sources of energy that do not impact the environment, being the most viable; solar energy which is endless and at no cost.

Wood saving stoves.

In Mexico, it is estimated that 19 million households still use firewood for cooking. In this sense, the 2019-2024 Development Plan assumed as its main objective the search for Sustainable Human Development, through a permanent process of capacities and freedoms that allow Mexicans to have a decent life without compromising the natural resources that are the heritage of future generations, based on the fact that the common good is the product of the solidarity effort of the members of society and the support of the state, in this In this sense, the promotion of different eco-technologies is considered important, among these energy-saving stoves. (Government Secretary, 2019).

To cover the needs of a family with an average monthly consumption, 500 kilos of firewood are required, which becomes approximately 6 tons per year, this implies that this resource is increasingly scarce, in addition to the time and money they spend in bringing it or transporting it to its place of use, in this sense he became aware of the need to create another strategy that implies the reduction of deforestation, as well as the health consequences that the combustion of this resource implies and, above all, make use of optimal energy provided by it.

Wood-saving stoves are also improved, efficient or ecological firewood stoves, and the importance of these is that in Mexico 20% of the Mexican population uses firewood to cook their food and heat their homes, which is mostly located in rural areas, which in addition to consuming important natural resources, are also exposed to wood smoke, according to data from INEGI 2010, (Federal Commission for the protection of health risks, 2017).

When using a wood-saving stove, there are several benefits, as previously mentioned, the percentage of deforestation in the area where people live is reduced, since the percentage of wood consumed in a traditional stove decreases by 40% , also decreasing the time spent collecting it, its construction does not imply a high cost, the smoke no longer stays inside the house because it is expelled outside it, and thus significantly reduces respiratory problems .

Likewise, PESA (2007) considers that the benefits provided by the use of wood-saving stoves are as follows:

• Pressure on wood energy resources and local deforestation rate are reduced.

• The consumption of firewood is greatly reduced since its gallery system that conducts heat and smoke to places of better use and expulsion of smoke conserves heat for a longer time.

• Decrease working hours for women.

• Significantly reduces the emission of smoke inside the houses.

• Family members stop breathing smoke and smoking family clothes and belongings.

• The risk of contracting respiratory diseases, throat and eye irritation, headache, cough, even lung cancer is avoided.

• Savings in money for the cost of transporting firewood.

• Two or three meals can be cooked at the same time.

• The burners are protected which avoids the risk of burns.

There are several models of wood-saving stoves and among these is the "Lorena Stove" which is built with several burners and two fire channels, where the burner located above the combustion chamber is attached to the largest pots, this type of stove also serves as an oven, wood dryer, home heater and can also be used as a dining table. With respect to the two chambers of this, they can be controlled by metal sheets in the cracks, in such a way that only one burner is used.

Its name is due to the composition of its materials mud and sand (Lorena) which provides high energy efficiency, comfort and smoke control and where you can also obtain the combustion of burning wood, straw, sawdust, pineapple pine and coconut shells. (Valencia, Limón, Arruda and Cardozo, 1999)

As an important investigation, it was found that an investigation was carried out in residents of two communities in the state of Puebla who had adopted the Lorena stove, finding that they had saved 25.84% of firewood consumption and that since its adoption in 2009- until 2016, The research was done, they had stopped cutting 40 trees (Vázquez, Cruz, Santos, Pérez & Sangerman, 2016), which means a great benefit both for the health of the inhabitants and for the conservation of forest resources.

Solar ovens

Solar ovens are attachments that use sunlight to cook food without the need to use traditional fuels, the first solar stove or oven was invented in 1767 by Horaca Saussure, who experimented with the greenhouse effect and also cooked using sunlight, but Finally, Dr. María Telkesi of Hungarian origin, who developed them in the decades of 1950-1970, is considered a pioneer of solar cookers (Placer, 2014).

Solar ovens can be of two types; Concentration ovens and box ovens, concentration ovens centralize the sun's radiant energy at a focal point through a parabolic reflector, which is the point where the pot that will contain the foods that are intended to cook due to It reaches high temperatures, so you can even fry food, while box ovens are as their name says, thermal boxes that capture sunlight and keep it inside.

In both cases the materials have the characteristic of being low caloric conduction, so different risks such as burns or fires are avoided, in addition to the fact that the food retains its flavor and nutritional value.

These represent an alternative for cooking when it is intended to reduce fuel consumption, both rural and metropolitan areas can be used, although it has its disadvantages, for example, it cannot cook food directly, nor can it be used on cloudy days, but it can be used for cooking foods that require a pot.

These accessories work by concentrating sunlight on a parabolic reflector or capturing infrared radiation in an isolated box, in such a way that the sun's rays are concentrated on a small surface, just as there are solar ovens, which are boxes covered with insulating materials which They have a transparent cover and allow food to be sewn through the cooking process, both implements have reflective materials that allow sunlight to reflect in a certain area, (Unit of Ecotechnologies, 2014).

The materials used to build the solar oven must be resistant to humidity and heat, since in the cooking process, water is released from them in the form of steam and, on the other hand, the acquired temperature exceeds 100oC, for this, four types of materials are needed for its construction; a material for the same construction of the furnace, which may be wood, a material that insulates it, a transparent material and a reflective material, (Instituto Tecnológico de Canarias, 2007).

Solar cookers are safe and healthy, there is no fire or smoke that can cause affection in the eyes or diseases in the lungs, most of these ovens have a temperature between 82 and 121oC, which are ideal for preserving the nutrients in food Its flavor characteristics are versatile and adaptable to any type of construction material.

When using this type of solar oven you save money and large amounts of fuel since it is not required, as well as saving time since you can leave food cooking and go out to do activities outside the house without worrying that burn.

Solar water heater

The heating of water in homes in Mexico is obtained mainly by burning fossil fuels such as LP gas, natural gas and / or firewood, especially in rural areas, and in the productive sectors it is obtained with LP gas, gas natural, fuel oil, diesel and with electricity.

That is why it is necessary to reduce the environmental impact that has been generated over time, where energy resources, such as oil, gas and others are involved, and where we have forgotten that there is an important and endless source of energy that is sunlight, which provides heat through the physical process called radiation, and where the waves it releases travel through space and when they reach the planet heat it, considering that the solar energy that it receives in one hour is land, is equivalent to the energy that the world demands in a year, in itself only 40% is used.

In the phenomenon of the heating of the water by means of the sun, the absorption process develops, in which a part of the solar radiation is transformed into heat energy or body heat that is transmitted, in this process a part of the heat is absorbed and another is reflected, and the part that is absorbed will be from greater to lesser amount, depending on the color it has, since dark colors have a greater absorption capacity than light colors.

The solar heater offers the advantage of great savings in fuel consumption of up to 80%, making it beneficial for family spending, in this sense the importance of using solar energy to generate heat and electricity is recognized, as for example in the heating of water that we use for the bathroom, for which devices such as water heaters have been devised, which are systems that raise the temperature of the water with the energy that comes from the sun, in such a way that the use of gas or electric power, these normally consist of three parts.

− A flat solar collector, which has the function of capturing energy from the sun and transferring it to the guide.

− A thermal tank, which is where the hot water will be stored.

− A system of pipes through which the water will circulate once heated.

Water heaters are normally installed on the roofs of the house, which must be slightly inclined and oriented in such a way that it is exposed to the sun most of the day, and where its process is carried out through the process of thermosiphon, which is caused by the difference in temperatures, this happening between the flat collector and the hot water tank, which motivated a natural circulation without the intervention of any pumping system, this because hot water is lighter than water cold, (Barrientos, 2017).

There are several models of water heaters with sunlight, among the most practical is the heater made with a waste tire, its chamber is made of rubber material, flexible, but at the same time resistant, it is black , they are cheap, abundant and can contain water or air without any type of leakage, in addition to contributing to the reduction of pollution by burning them, where large amounts of carbon dioxide are generated, lethally harmful to humans.

To install the solar heater requires an approximate surface of two meters in radius, preferably located on a rooftop which allows it to have enough gravity for the water, direct exposure to the sun and a certain inclination to direct itself to the path of the sun, in addition It has the advantage that its duration is around 25 years, while that of a boiler is an average of five years.

The elements of the rubber chamber solar heater are as follows:

–   Rim; the sensor of solar rays. - This works as the heat collector due to its material and its black color, it contains the hose and serves as a thermal insulator, avoiding heat losses and raising the temperature of the water contained in the hose, also the rim has a transparent glass surface which will allow the passage of the sun's rays, and at the base it has a black colored sheet that helps to better absorb heat.

–   The hydraulic network; the hose. - The network through which the water circulates is a hose, which is also black to completely absorb radiation, in which the water accumulates inside to be heated and at the same time works as a storage tank.

–   The absorbent plate; the black foil. –It is a plate of black painted foil itself that is placed at the base of the rim to cover the rear hole of the same rim, it serves as a heat-picking surface that emits radiation at a greater wavelength due to the effect of greenhouse, and at the same time prevents heat loss by sealing this collector.

–   The transparent cover. - Glass. - the function of this circular glass placed in the front hole of the rim is to create a greenhouse effect, which reduces heat losses by convection and to isolate the collector from water from the wind and other meteorological agents.

It is recommended that the heater be located near the bathroom to prevent heat loss due to having distant pipes, since, in the path of the water through these, it could lose heat, this type of solar heater is calculated to meet the needs of a family of five members (Brito, Galindo, Ramos, and Romo 2014)

Wood oven for bread

The art of cooking in an oven made with stone and clay is lost throughout human history, it is known that they were used since the Egyptians and a wide region between the Tigris and Euphrates rivers, where clay is characterized by its hardness and its insulation since it conserves heat much better than other mud or earth.

Cooking food in a wood oven provides them with a different flavor and texture, in addition to acquiring the knowledge of building a clay oven with your own hands and especially knowing how to concentrate heat to save fuel than in this case is firewood, To build this you need mud, stones or brick lime, sand, cement, metal rods and wire, wood and cow dung or horse fermented previously 15 days, and masonry and carpentry tools.

This is built starting from the base, which can be circular or square and its recommended height is 60-70 cm. To build it, it is recommended that the materials of the area are used, such as stones or, failing that, use brick. the MA. In the last brick layer at the base of the oven is the space where the trays should be placed with what is going to be cooked, recommending putting a glass layer formed with pieces of bottle waste, which have the function of concentrating and keep the heat, and on top of this goes the last layer of brick.

Later there is the mouth of the furnace, which can be made with two rods in the form of a reverse "U" and its walls form the same furnace with stone or brick and mud.

For the construction of the dome cross rods are placed, and on these you can put wire mesh and on top of the stones or brick, finally the layer of mud is put on the outside and inside and trying to make it well flattened, it can also be used mortar to keep the temperature in the oven more, finally a duct is placed to exit the smoke from the oven, which can be a galvanized tube.

When the food is cooked first, it must be put to the formation of the coals, once they are red hot, they are traveled to the periphery of the oven in such a way that the center of the oven is free and in that space they must be to put the trays with the foods that are intended to cook.

The advantages of cooking with the clay oven is that the heat becomes concrete, so less firewood will be required, local materials are used, and the cooked food acquires a better flavor.

Solar dehydrator

Throughout history, the human being has invented different methods to preserve food, among these is dehydration, which consists of extracting water through heat, this allows the properties of its nutrients not to be altered, this eco-technology it not only preserves food, but allows it to be stored, transported and handled.

The advantages of foods that have been dehydrated are as follows:

– It allows preserving all kinds of food such as fruits, vegetables, meats, fish, mushrooms, aromatic and medicinal herbs.

– Food can be kept for months and years, especially if stored in glass containers after dehydrated.

– Maintains the quality of nutrients in food.

– Food flavors intensify.

– Food dehydration allows them to take up less space.

– They are a food alternative when traveling.

– Food can be kept outside the production seasons of these.

The conditions for a good drying of food must take into account:

1. That the air is at a temperature between 40-70oC.

2. That the air has a low percentage of humidity.

3. That the air movement is constant.

This is necessary since, when air is heated, which is at room temperature and with a certain percentage of humidity, it increases its property of absorbing water vapor, this is because, for every 20oC increase in air temperature , its property of retaining water vapor triples and humidity is considerably reduced. In this process it is important that in order to eliminate the humidity of the food the air constantly passes, where the chimney effect develops.

Something important to mention is that for there to be a good drying of the food, these must be separated enough so that none of its parts remain where the air does not pass.

The dehydrator consists of two sections: The window for the entry of cold air, which is protected with mosquito netting and located at the bottom of the front of the dehydrator, the air goes to the drawer where the racks with the food to be dehydrated will be contained. , there is also the area where the sun's rays are caught, this concentrates the heat from the sun's rays, which allows heating the air that passes inside the dehydrator box.

There are also the racks which are made up of two black shelves with mosquito netting, also black and located inside the dehydrator box.

Finally there is the air outlet, which is a window that is located at the back and at a higher height than the dehydrator's air inlet window, which has a mesh to prevent the entry of dust or insects and where The hot air comes out once it has passed through the food to dehydrate it. (Celestine Pérez Almada Foundation s / f)

Ecotechnologies for biofertilizers; the vermicompost

Heterotrophic organisms also contribute to the formation of ecotechnologies, in this case the Californian Red Earthworm, whose function is to reduce, use and take advantage of organic waste that leaves the home or other activity, such as kitchen waste and especially manure. of animals. Earthworms through their digestive system transform these organic wastes into compost soil, in addition to contributing to oxygenate the soil through their excavation, and thus give rise to a compost called earthworm humus (National Commission for the development of indigenous peoples, 2002). The advantages of the vermicompost are the following.

– It favors the environment by reducing pollution problems from urban solid organic waste that is thrown into the open air.

– It transforms organic waste into products of great benefit for agriculture in the production of healthy food.

– The worm compost has a high microbial load that allows it to participate directly in soil regeneration.

– Increases and maintains a high level of soil fertility.

– Regulates sudden changes in pH.

– It cushions sudden changes in temperature.

– Increases the moisture retention capacity of the soil.

– Nutrients in the earthworm compost are in the form available to plants.

The protein content present in earthworms allows them to be used as a complement in human and animal nutrition (Brito, Galindo, Ramos and Romo, 20000). Other important benefits found according to Prado (2013), are the following:

– The vermicompost is a fertilizer high in some nutrients that are essential for plants such as nitrogen, potassium, phosphorus and magnesium, in addition to minerals and micronutrients which are easily absorbed by plants.

– The vermicompost also contains beneficial microorganisms, as well as enzymes and growth hormones for the same plants.

– The vermicompost has the ability to drain soils, improve their structure, as well as moisture retention.

The BigBlueButton Tool (BBB)

BigBlueButton is an open source synchronous tool, which has proven to be an effective alternative in educational processes, since it gives rise to virtual spaces for real-time communication where students, the advisor and students can exchange information through a videoconference, chat, whiteboard, as well as file sharing, thus generating a teaching-learning process remotely.

The BigBlueButton tool provides a series of elements that make interactivity possible between those who participate, such as:

– It has an interactive whiteboard in which the participants can present transparencies, clarify doubts, make comments, make annotations in relation to the file or the image that was uploaded to the whiteboard, the whiteboard is normally controlled by the teacher, but the teacher can also give command to one of the students.

– Also this tool allows the students and the advisor to see and hear each other, where the teacher controls who is participating by giving the voice to one or more of the students.

– It allows the teacher and students to share their desktop or a window in real time, giving them the opportunity for participants to make their demonstrations or raise questions such as the realization of a technique, application or tool.

– Each student can choose the practice they want to do, such as talks, giving a presentation, holding a seminar.

– This also gives rise to interaction between the students or between the advisor and students, through audio, video and text messages.

– Another of its advantages is that the sessions can be recorded and watched as many times as required according to the needs of the participants, (Grimaldo, Fuertes, Cobos and others, 2014)

The problem

The students of a Bachelor of Education with a specialty in Environmental Education from a Virtual University, began with their professional practices, where they would carry out an Environmental Education in Ecotechnologies project in different locations in the Guadalajara metropolitan area, which was mainly intended for low-income people who live in remote locations, aiming for people to know and become aware of the importance of making a different use of natural resources, and to develop a different way of relating to the environment, in addition to having savings in expenses The project included the following stages:

– 1st Stage of information; where they would be provided with knowledge to identify the elements of the environment, their dynamics and relationships, using for this pedagogical strategies and didactic resources.

– 2nd Stage of awareness; where people would be led to a process of reflection based on the lessons learned, about the importance of caring for the environment through the use of different ecological technologies.

– 3rd Stage of Planning of ecotechnology; at this stage he would plan the development of the construction of eco-technologies.

– 4th Stage of construction of eco-technology.

At the beginning, six students who resided in the Guadalajara metropolitan area were enrolled, so it would be easier to carry out professional practices, since the advice of teachers would be in person.

Subsequently, the application was received from 6 students who were very interested in participating in these professional practices, but resided outside the Guadalajara metropolitan area; two of these in other municipalities of the State of Jalisco such as Atotonilco el Alto and Ocotlán, and four other students in other states of the country, such as Toluca of the State of Mexico, Mérida Yucatán, Cd. Jiménez Chihuahua and Ixtapaluca of the State of Mexico.

This application was complex since teaching students how to build an eco-technology and how it works is easier in person, than, at a distance, so they had to think of an online teaching strategy that would enable the student to carry out the development of eco-technologies in their localities, so it was decided to use the technological tool called BBB as an important element of the teaching-learning strategy.

For this reason, this research aimed to identify which teaching-learning processes can be developed online, using the BBB tool, in relation to an environmental education project in ecotechnologies for sustainability.

By knowing the results of this research, it will be possible to continue using the ICT tools for online environmental education, furthermore, improvements can be made to the online educational process regarding this area of knowledge, as well as environmental education can be taken to areas where it is not possible to get face-to-face education and finally people will have an education about the environment, which will allow them to have a different relationship with the environment around them.

Method

A qualitative research was carried out which according to Stratuss and Corbin (1990), cited by Sandín (2003); It is the research that generates results that are not normally accessed by statistical procedures, for example, people's lives, stories, attitudes, as well as being descriptive in scope, since they seek to specify the properties, characteristics of people, characteristics and profiles of groups, communities and processes (Danhke, 1989) cited by (Hernández, Fernández and Baptista, 2014).

In order to obtain the information, documentary research was used through the student reports, as well as the audiovisual material that accompanied these reports, which showed the progress and final results of their Environmental Education project, in eco-technologies for the Sustainability in the different localities of the state and the country.

To carry out the research, the students of the Guadalajara metropolitan area began with the approach of stage 1, in which they took on the task of taking the photographs and videos necessary so that the foreign students will be clear about the strategies of teaching that they had used, then began with the videoconference sessions through the tool (BBB) between the students and advisers where they shared, archive, photographs, videos, asked questions, comments, doubts were clarified, thus giving collaborative learning process, with the intention of preparing foreign students to start their 1st stage in their communities. When the foreign students carried out the 2nd stage, audiovisual material and files were also collected, which were shared through two sessions per week with classmates from outside the metropolitan area, to prepare them so that they could begin their stage. 2nd.

When the foreign students carried out the 3rd stage, audiovisual material and files were also collected, which were shared through two sessions per week with peers from outside the metropolitan area, with the aim of preparing foreign students to develop its 3rd stage. When the 4th stage was reached, where the eco-technologies were built, more emphasis was placed on collecting audiovisual material since it implied more skills to be developed in the students, as well as documents that were more focused on instructions, for which four videoconferences were held. where it was shown how eco-technologies were built, foreign students were trained and they carried out the construction of their eco-technologies in the communities.

Results

10 sessions of one and a half to two hours of videoconference were carried out, using the tool (BBB), for the 1st, 2nd and 3rd stages two sessions were needed for each one and for the 4th stage 4 sessions were occupied since the learning was more complex, in these sessions 12 students and two advisers participated.

During the course of the professional internship period and at the end of this, reports on the progress of the projects and their conclusion were arriving, finding that the teaching-learning processes were very similar between foreign students and those from the city, Like the eco-technologies that the students who lived in other municipalities and other states of the country built, they were very similar to those that the students from the Guadalajara metropolitan area had built, to whom the advice was given in person. The eco-technologies built by students from outside the municipality and from other states were as follows:

– It was found that the students of the municipality of Ocotlán Jalisco, through the environmental education they received through the aforementioned technological tools, carried out their project within an upper secondary school with a group of 40 students in an area far from the municipality. called Zapotlán del Rey, with the intention that the students will replicate them in their homes, carrying out the eco-techniques of the artisan clay oven, and where their reports made clear the process of information, awareness, planning of eco-technology as well as the photographs of the correct construction of the aforementioned eco-technology.

– As for the students of the Municipality of Atotonilco, they carried out their project in a community in the same municipality called Milpillas, where 28 people from that town attended, who attended the 1st, 2nd, 3rd and 4th stages carried out the construction of the ecotécnias of Stove Saving of firewood and El oven of mud, which allowed the people of the town to make better use of natural resources.

– As for the students from other states of the country, we found that the students from Mérida Yucatán, worked in a community called Dzununcán, which is an area with few public services, a low-level school, with a house mostly of dirt floor , with tin roofs of chapopote, but with a lot of sun in that state, in that locality they worked in a community center called "Companions of the way", which was attended by ten housewives.

- In this community house, the first 3 stages were carried out, supported by the information provided by their colleagues through the aforementioned technological tools and also with the use of posters and drawings. Finally, in their fourth stage, they developed the eco-technologies of the solar water heater and solar stove, even later the solar stove was presented at a local fair.

- In the case of Toluca students from the state of Mexico, the development of the project was carried out in a community called Cacalomacán, being a community where the climate is from cold to temperate, so the water heater would be of great benefit to them. benefit, in this community people are mainly engaged in trade as workers, farm traders and some professionals, and women are mostly dedicated to their home, so it was thought that another of the eco-technologies that could support them would be the food dehydrator so that people could use them for their family consumption or to market them.

- The 1st, 2nd, and 3rd stages were carried out in the home of one of the families, where posters and drawings were also used as didactic material, since there was no projector, and the development of eco-technologies was carried out out with two other families.

- At the end of the construction of these, the people asked about their doubts and some mentioned the need to make a larger heater, since the families are numerous and the calculations were made for other heaters of greater capacity.

- In the case of the students from Ixtapaluca from the State of Mexico, the project was presented at a basic middle school in Colonia Morelos, with two groups of approximately one of 32 students and another of 36, where they were first given the 1st, 2nd, and 3rd stage, and finally the construction of the fruit dehydrator was completed, but the interesting thing about this eco-technology was that it was linked to the subject of physics and biology since the student responsible for this project is a secondary school teacher, the Students were very excited and especially interested in seeing the possibility of marketing dehydrated products, since in this town some families are low-income and could replicate them at home.

- The construction of the ecotechnology of the solar heater was also carried out, this was carried out in the Aquiles Córdoba neighborhood of the same municipality with the people of the community, as in the rest of the projects, the 1st stages were carried out first, 2nd and 3rd and the day of the execution of the construction of the solar water heater arrived at the beginning, all the people of the town were doubtful that hot water could be obtained at such a low cost compared to the normal boiler, and besides that the use of gas that causes an impact on the environment would be saved, finally the heater was built in the home of one of the people in the community, they tested it confirming that it did work, finally they commented that they were going to buy their materials to also have their heater .

- Finally, the student who was in Ciudad Jiménez Chihuahua carried out her project through eco-technology called Lombricomposta, she carried it out in the ejido called "Jacobo" located 10 minutes from the mentioned city, for this she contacted the teacher of the secondary school of that town since they have a family garden and many of the families have a plot, or small orchards and gardens in their houses.

– To start, the parents were summoned to several meetings, carrying out the 1st, 2nd, and 3rd stages of the project, and in the 4th session the preparation of the vermicompost was carried out, for which they contacted in advance with SEMARNAF staff so they could provide you with the California Red Earthworm.

– On the day the earthworm was made, the people brought a wooden fruit box lined with newspaper and with soil and manure. They were provided with the earthworm and explained how to care for and handle the earthworm.

– The development of the solar heater project was also carried out in a colony located on the outskirts of the city, for which the president of the colony was located, the project was presented to him and it was carried out in the house of one of the people developing the 1st, 2nd, and 3rd stages using a PowerPoint presentation with a laptop.

– In the 4th stage, the construction of the solar heater was carried out in the house of another family, for which the people of the colony attended to help in the process and ask the questions of the doubts they had, later the student returned with the family after three days and it was pleasantly found that the family was already taking their bath with hot water and that they were very pleased.

Discussion

The fact that environmental education projects in ecotechnologies are developed within an educational institution, allows this type of education to be more widely distributed, since the number of people who learn is greater, and at the same time they are multipliers of these techniques in their homes and at the same time in the community. When developing energy-saving stove ecotechnologies, and the artisan clay oven in ranches or towns far from the municipal capitals, allows people to know how to better use their natural resources such as firewood, since techniques that concentrate heat and also reduces the amount of firewood they consume, thus also decreasing the amount of pollution to the environment from the emission of gases.

Another important eco-technology was the solar stove, which, together with the energy-saving stove and the handmade clay oven, represent techniques that allow people to obtain a benefit from energy and at a low cost, since in the event of sun this is free.

The selection of eco-technologies must be based on the climate, the locality and the economic activities of the people, since taking into account these conditions will be of greater use to people.

It is important to take into account that eco-technologies were accepted because space was given for people to have learning about the environment, which allowed them to carry out an exercise to reflect on how they could have a different relationship with their environment. and appear more receptive for the construction of the same.

Conclusions

The tool (BBB) represents a very effective instrument for achieving online teaching-learning processes, since it allows synchronous interaction, leading to complete feedback and collaborative learning.

The use of the BBB tool favors online education to be more effective in distant areas, as well as to have better results in terms of teaching-learning processes.

The tool (BBB) not only allows the development of competences in terms of knowledge, but also fosters the development of skills and attitudes in the educational field and in this way online education allows Environmental Education to reach the communities where there is a need for this education, which develops a different form of the relationship between man and his environment.

The fact that ecotechnologies for sustainability reach retired communities, allows people to take advantage of natural resources that were previously not taken into account, and by using them, people can have better living conditions, such as having hot water for the bath, cook your food with solar energy, process food for preservation and make nutrients for your crops.

In the same way, the use of ecotechnologies allows people to save on their expenses, since they will not have to buy energy, or synthetic fertilizers, so they will not use natural resources in a way that impacts the environment, but the most important thing is that people based on their new knowledge about the environment will have the opportunity to reflect on the role they play in the conservation of nature and the importance of relating in a balanced way with their environment.

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The empathy during the training of the dentistry at the Universidad Autonóma de Sinaloa

La empatía durante la formación del odontólogo en la Universidad Autonóma de Sinaloa

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Abstract

In this paper, the first part of the investigation of the level of empathy of dental students of the Autonomous University of Sinaloa by school grade and gender is presented, implementing the Workshops of Interpersonal Relationships and Self-Esteem (RI and A), with the support of Human Development and the Person-Centered Approach as an educational strategy to foster the development and strengthening of the level of empathy of dentists in training. This research was non-experimental, transectional, exploratory and descriptive with a mixed approach. The Jefferson Medical Empathy Scale in its Spanish version was applied in the first stage to 364 students and adapted to training dentists investigating their level of empathy. The results of this first stage of the first and third year female gender presented a higher score in level 2 of empathy. It is important that, in addition to recognizing the empathic level in the dentist-patient relationship, educational strategies and continuous training that foster their personal development, including a positive impact on the interpersonal relationships they establish with their patients, are included in the professional training of dentists.

Empathy, dentistry, health, students, teaching

Resumen

En el presente trabajo se presenta la primera parte de la investigación del nivel de empatía de los estudiantes de odontología de la Universidad Autónoma de Sinaloa por grado escolar y género implementándose la realización de Talleres de Relaciones Interpersonales y Autoestima (RI y A), con el sustento del Desarrollo Humano y el Enfoque Centrado en la Persona como estrategia educativa para fomentar el desarrollo y fortalecimiento del nivel de empatía de los odontólogos en formación. Esta investigación fue de tipo no experimental, transeccional, exploratorio y descriptivo con enfoque mixto. Se aplicó en la primera etapa a 364 estudiantes la Escala de Empatía Médica de Jefferson en su versión en español y adaptada a los odontólogos en formación investigando su nivel de empatía. Los resultados que arrojo esta primera etapa el género femenino de primero y tercer año presentaron mayor puntaje en el nivel 2 de empatía. Es importante que además de reconocer el nivel empático en la relación odontólogo-paciente se incluya en la formación profesional de los odontólogos estrategias educativas y capacitación continua que fomente su desarrollo personal buscando un impacto positivo en las relaciones interpersonales que establecen con sus pacientes.

Empatía, odontología, salud, estudiantes, docencia

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Introduction

Education in Mexico is undergoing constant changes in its structure and in its teaching methods, from the basic level to the higher level, thereby seeking to train trained professionals who respond to the demands of society by providing satisfaction in the services provided. Proof of this is the Faculty of Dentistry of the Autonomous University of Sinaloa, a higher-level educational institution which since its origin to date has had important changes both in its curricular structure and in its teaching methods.

Guerra (2013) comments that the career of dental surgeon at the Autonomous University of Sinaloa (UAS) has its beginnings in 1978 responding to the need to have oral health professionals in the northwest region of the country, the educational model was modular (The courses are organized by modules, defined by multi and interdisciplinary transformation objects). Since then, the curriculum has been modified on several occasions, adapting itself to the times and educational processes of our contemporaneity.

There is no doubt that changes in educational plans are always present in the training of professionals and it becomes evident that in health areas where the primary pillar is patient care, important aspects of these processes stand out, especially in this case. Particularly in which empathy is studied which in this field of health is considered an essential requirement to achieve an effective dentist-patient relationship and where unconditional acceptance of individual differences and careful listening form the pillars to achieve understanding pain, feelings and / or mood of the patient trying to put himself in his place with tolerance and positive attitude.

That is why the health sciences demand extensive theoretical, practical and attitudinal knowledge which should be developed during their training process; however, attitudinal training becomes difficult to teach in students when it is not empathically transmitted by teachers and where the rescue of values conceived in the family is not reflected in positive attitudes or they act wrongly when interacting with the patient.

From this context, this research based on the mixed method emerged, which was carried out with students from the School of Dentistry in the afternoon shift at the Autonomous University of Sinaloa during the period from September 2014 to May 2015.

Problem statement

Definition and limitation of the problem

Empathy is part of the socio-emotional intelligence model that integrates interpersonal skills, in turn, it is defined as the ability to be aware and understand the emotions, feelings and ideas of others, which is why it is considered a cognitive component (Fernández, López & Márquez, 2008).

Hojat and Mangione (2001) consider the development of interpersonal skills the backbone of empathy, and say that it is an important element of professionalism in medical, dental and any other teaching and practice in the area of health.

In this sense, it is known that the pedagogical practice of educational institutions in the health area, such as dentistry, is focused on promoting the merely cognitive and procedural aspects, avoiding important affective and cultural aspects, which leaves them at a disadvantage. the dentist-patient relationship greatly decreasing the achievement of goals.

That is why, in the dentist-patient relationship, having knowledge and developing empathic skills acquires great importance, since the dentist from the first moment of interaction with the patient will use these skills, thereby providing a climate of trust, certainty and success in dental treatment (Prabhu, Kumar, Prasanth & Kishore, 2014). In the dental practice clinics of the Autonomous University of Sinaloa, it is observed that the students receive the patient, place him in the chair and on many occasions begin to work in dental treatment without covering the minimum conditions of care such as ; clinical interview, speaking to the patient by name, directing the conversation by asking clear and sufficient questions, activating careful listening, unconditional acceptance, activating the ability to observe in non-verbal language, corroborating after the messages have been received correctly in order to develop the proper diagnosis and treatment plan.

The teacher's intervention is to make the student aware of the importance of the dentist-patient relationship, since the attitude depends more directly on the will of the person, which is known to be compromised for various reasons such as fear, insecurity or the lack of motivation, that is, the attitude is modifiable (Gallardo, 2011).

That is why in the UAS Faculty of Dentistry the subject of medical psychology is taught in the fifth semester of the degree program, whose objectives are that students learn, develop and apply empathetic skills when attending to patients in their clinical practices; however, taking this subject has not been enough for students to endorse the knowledge taught in it and to achieve the value and meaning to apply it naturally when interacting with the patient.

Howard, Navarro, Rivera and Zamorano (2013) comment that the learning of the dental career includes the acquisition of knowledge in the area of basic and medical sciences, but in many occasions the skills related to emotional intelligence such as empathy.

Suardíaz (2011) says that the search for the passage to a true human conception is in the intersubjective since the contrast between apathy and empathy implies opening up to a different way of structuring for a healing relationship between a health server and his patient. While apathy implies an inability to feel and accept the signs of illness, conversely empathy implies the ability to put oneself in the situation of the other, which makes him feel in the world as he feels, thus exercising his exercise in a professional way alongside the sick.

These fundamental aspects for the future dentist should be present in a cross-sectional way throughout the entire career, constituting a basic framework on which the knowledge and skills imparted using different disciplines such as bioethics and dental psychology, among others, are founded (Oviedo , 2011).

Bazerque (Quoted in Aguas and Castiglia, 2010) talks about and comments on the four universally accepted principles of the ethics of the practice of health professions:

The first principle is respect for autonomy (freedom), which passes from the paternalistic perspective of the health professional to that of the patient, who has the right to choose or reject a certain treatment, which influences their quality of life beyond of its therapeutic value.

The second principle (fraternity-solidarity), the "primum non nocere", for modern health care, the first thing is not to harm.

The third principle is beneficence (fraternity solidarity), where the patient has the right to the best treatment.

And finally, there is justice (equality) where there is talk of the equitable distribution of health resources, where research in its field with the participation of patients is only justified if there are reasonable possibilities that the population on which it is investiga can benefit from the results.

That is why it is necessary to highlight the importance of the communication skills of health professionals, since they encompass crucial aspects when caring for a patient, giving them information, understanding their perspective and relating to them. Remor, Arranza and Ulloa (cited in Jaramillo 2009) insist that patients and family members want to perceive that the professional who cares for them is competent, that their behavior reflects sensitivity, warmth and concern for them and thus they will feel more satisfied with professionals who do not are emotionally neutral.

Theoretical framework

Conceptual framework

Empathy, was pointed out many years ago by Rogers, as a primary attitude within assertive relationships, as well as careful listening, unconditional acceptance, as well as authenticity or consistency. Various studies of different therapeutic orientations have shown that there are significant positive associations between these attitudes and the results of the treatment, also these associations are clearer when they are evaluated by the patient regarding the treatment received (Bados & García, 2011).

Gutiérrez, (2005), comments that for Rogers, empathy is the ability to perceive another person's internal frame of reference accurately, seeking to feel the same as the other person but without losing their own condition, assuming at the same time that empathy It is not a psychological or emotional experience, nor a psychic leap into another person's mind, but an openness and respect towards the other.

Garza (1996) says about the concept; Accepting and respecting another person without judging, labeling or making value judgments based on their behavior, is already unconditional positive acceptance as an important part of the basic attitudes of empathy as well as consistency, and that to be consistent is to be oneself, which implies acting in correspondence with what is thought, felt, valued, known or ignored. Being consistent means being a genuine, open, authentic and free person in each of the human relationships that are established.

In the context of the health area, empathy acquires great importance when interacting with the patient and is described as a concept that encompasses cognitive, affective and emotional development, where the cognitive domain implies the ability to understand the experience of the world Inside others, the affective domain refers to celebrating or participating in the experience of the feelings of the other and the emotional domain to the subjective responses obtained by affinity with other people (Oviedo, 2011). Hojat (2011) expresses that, from this empathic relationship, and good communication is achieved, that the health professional obtain a greater therapeutic alliance, better satisfaction, trust and acceptance of the patient.

At the same time, Gutiérrez (2005) comments that philosophy is interested in the essence of knowledge and psychology is interested in the knowledge process, two indispensable and constantly strengthening situations in any profession in which interpersonal relationships intervene, says that education understood in the broadest sense, it is oriented towards the integral, harmonious development of the person, which is why it must cover all aspects in the different stages of human life, so as not to refer only to simple intellectual instruction or transmission of information and knowledge imparted in the classrooms of educational institutions.

Psychology and sociology are fundamental pillars in the formation of the personality aspect of the future health professional where empathy is very important for the development of interpersonal relationships and facilitates competence in communication, the main dimension of quality within professionals from the health area.

Aguas and Castiglia (2010) say that, in the world of human values, art is easily universal, the same not happening with ethics or morals since these have important religious and cultural differences. And in turn they comment that evolution allows the subsistence of only those behaviors that do not go against survival and reproduction, that when living in groups forming a society, egoism must be limited that individual desires must be put in synergy with the social moral feelings, of empathy and sympathy, that lead to altruism, visible in many species, including ours where empathy is the ability to represent the mental states of the other and to recognize differences with one's own.

Van Manen (2010) explains the importance of having tact and sensitivity, as well as a conscious perception when relating to students, for which he points out that a person who has tact possesses the ability to know how to interpret thoughts, feelings and interior desires through indirect keys such as gestures, behavior, expression and body language.

Undoubtedly, studies on empathy in the training of students in the health area have become sources of data, information and realities in their praxis, with which and through the findings found, it has allowed the implementation of mechanisms essential in rectifying or maintaining the training of solidly empathetic professionals.

Psychology considers, like sociology, the interest in returning to the socio-affective aspect of the human being, trying to discover the conditions on which the success of interpersonal relationships depends, where empathy is an essential part, which is why It is convenient to know the importance of empathic relationships in the training faculties of professionals in the health area (Gutiérrez, 2005).

In this regard Hojat and Mangione (2001) carried out and published in Philadelphia Pennsylvania in the United States one of the first papers on empathy, they presented it on a large scale carried out at Thomas Jefferson University, with medical students, residents, nurses and doctors exercising using the Jefferson Medical Empathy Scale (EEMJ) and where preliminary results indicated that women are more likely than men to be empathetic and that practicing physicians are more technology-oriented rather than patient-oriented, likewise found that the most advanced grade students show a decrease in empathy.

Later Hojat, et al., (2002) group of medical education researchers at Jefferson Medical College recognized the need for an instrument to measure empathy in the context of medical education and patient care, so they set out to investigate empathy in 371 third year medical students during two academic periods, applying the EEMJ. In particular, they managed, on the one hand, to confirm the hypothesis that medical students with a higher empathy score (120) would obtain higher scores in the clinical practice competition; conversely, students with low empathy scores (115) did not receive high scores in the six basic third-year clinical rotations. Therefore, they believe that empathy in the context of health care can be defined as the ability to understand the experiences and feelings of patients and recognize the development of interpersonal skills as the backbone of empathy, considering it a Important element of professionalism in medical teaching and practice.

Chen, Kirshenbaum, Yan, Kirshenbaum, & Aseltine (2012), carried out at the Boston University School of Medicine, Boston, MA, USA in 2006, a cross-sectional study of 658 students with the objective of measuring and examining student empathy through the years of study in medical school, using the Jefferson Medical Empathy Scale in its version for students as a measurement instrument. Obtaining as results that the first year students presented higher empathy scores while the fourth year students had the lowest scores.

The results of the study in question drew attention since the student reported more empathy in his pre-clinical years than in the clinical years and invited to ask himself the question of what happens in the course of medical education and proposes that research is necessary to confirm what was found and to design interventions to mitigate this impact, since it is of great interest to keep in mind that empathy is important in the doctor-patient relationship and has clear benefits for the patient and the doctor.

Schwartz and Bohay (2011) conducted a study at the Schulich School of Medicine and Dentistry at the University of Western Ontario, where student perspectives were examined to determine the impact of new educational methodologies designed to integrate patient voices, (of the management or attention given by the doctor or dentist), through videos where patients describe their experiences and are exposed in a series of conferences.

After this, the students have had to make of these videos a reflection journal on the topics seen. The results of the study indicate that students perceive this innovation as an improvement for the teaching of professionalism. They also comment that this raised their awareness of the importance of empathy and the lecture course was very well received by all students.

Alonso and Kraftchenko, (2003) at the Faculty of Medical Sciences, Matanzas, Cuba, carried out a descriptive study of doctor-patient communication as part of ethical-professional training for 124 students and 43 professors from different years of the career and in which Empathy was part of the three communication functions analyzed and where it is considered as a mechanism for mutual understanding. Among the results obtained, some researchers consider that there is a limited contribution of the teaching process to achieving adequate doctor-patient communication in students, which is associated with insufficient ethical-professional training.

Also Beattie, Durham, Harvey, Steele, & McHanwell, (2012), at the Faculty of Dental Sciences, Newcastle University, UK examined the level of empathy of 66 freshmen in a before and after course on behavioral sciences that are taught before they attend patients, using the EEMJ as an evaluation instrument and resulting in a significant increase in the EEMJ measures pre and post course, which led to the conclusion that the Jefferson Empathy Scale has potential usefulness in evaluating the cognitive-affective aspect of empathy and that professionalism is a central principle of the dental curriculum, and in this sense empathy should be considered as an important component of attitude, for which reason they recommend that observational studies to investigate dental student attitudes, and the role of teaching models deserve further investigation.

Similarly, Rivera, Arratia, Zamorano, & Díaz, (2011), in the analysis carried out at the Faculty of Dentistry of the FinisTerrae University of Chile in 2009, to assess the level of empathic orientation in the third, fourth and fifth year students, the Jefferson Medical Empathy Scale was applied, resulting in the scores obtained in the (EEMJ) being higher in the most advanced levels of the career. Women have higher scores than men at the different levels studied. These men present greater increases in the scores obtained at the same levels evaluated. Given these results, it was concluded that third, fourth and fifth year dental students have a high level of empathic orientation. That women show fewer changes in the levels evaluated, while men show a greater development of their level of empathic orientation.

For his part, Oviedo, (2011) in the cross-sectional descriptive study carried out at the Faculty of Dentistry at the University of Carabobo, in Madrid, with 675 dental students and where the objective was to analyze the degree of empathy that students in training have. first, third and fifth year, using the Jefferson Scale of Empathy in Spanish and adapted to students as a tool, found that the empathy of first-year students is significantly less than that of third-year and fifth-year students. just like the factor taking perspective and caring with compassion.

Continuing with the above, the lowest score was obtained by the factor putting yourself in the patient's place and was similar in the first, third and fifth year students. The empathy obtained by female students did not differ statistically from male students for the study population. One of the conclusions they reported was the need to cultivate throughout the professional training the ethical humanistic aspects with empathy as a fundamental pillar of positive dentist-patient relationships.

Likewise, Chew, Zain, & Hassan, (2013), studied at the University of Malaysia, 163 medical students under a cross-sectional study, using a scale on Emotional Intelligence as a tool, examining its effect on academic performance of medical students in the first and last year of the degree. The results here denoted that the students who had better Emotional Intelligence obtained better results in the continuous evaluations and in the final exam. Therefore, they concluded that the development of emotional skills can improve the academic performance of medical students.

In Malaysia, Babar, Omar, Lim, Khan, Mitha, Ahmad, & Hasan, (2013) carried out a study with the aim of analyzing the validity and reliability of the Jefferson Medical Empathy Scale in its version for "S" students in a sample of dental students from Malaysia, the secondary objective was to assess the level of empathy in the first and last year of the degree course in 441 dental students from public universities and 141 students from private universities in Malaysia.

The results of the previous study showed a good internal consistency of the Jefferson Empathy Scale in its three factors, as well as that those of the masculine gender reported a higher empathy score than the feminine ones, in the same way the fourth year students presented more scores. high empathy and students from public universities were more empathetic than those from private universities. Among the conclusions, these authors suggested that, in future studies of empathy in students, they be made longitudinally in order to explore changes throughout the career years.

Costa, Alves, Neto, Marvão, Portela, & Costa, (2014), in a multi-institutional cross-sectional study carried out at the University of Minho, Braga, Portugal, where 472 students from three medical schools participated seeking the existing association between empathy and personality of medical students using, among other tools, the Jefferson Empathy Scale (EEMJ-SPV) adapted to students from Portugal, finding that there is an association in these schools between the dimensions of friendliness, openness to experience and empathy since the personality of These contributed significantly to identifying the most empathetic students. Therefore, they recommend that medical schools should pay attention to the personality of the students in order to understand how to improve empathy and contribute to increasing the chances of achieving greater adherence to treatments, better health results and greater patient satisfaction.

For his part, Casabuenas (2007) in a study carried out at the Autonomous University of Barcelona, where the objective was to analyze the conversation of 39 participants during the doctor-patient interview in a primary care center in the province of Barcelona, they sought to identify the verbal and non-verbal expressions manifested by the patient, in addition to knowing if the doctor recognizes these expressions, identifies them and somehow responds to them, concluded that doctors have to improve communication skills, as well as their skills in identifying and managing own and other people's emotions, in addition to applying these skills in daily clinical practice since the results of their research identified a lack of empathy, attentive listening and unconditional acceptance by the health professional towards the patient.

In this regard, a study by Khademalhosseini, Khademalhosseini, & Mahmoodian, (2014) was published in the Journal of Advances in Medical Education & Professionalism, carried out on medical students from the first to the seventh year of study at the Shiraz School of Medicine (South of Iran) in 2010, where the Iranian version Jefferson's Empathy Scale was applied. According to the results obtained by these authors, they concluded that the students generally had a low level of empathy, which caused them great concern and made them suggest courses on empathy as a possible inclusion in the curriculum, and said that interpersonal skills and communication

They are considered a very important proficiency index for medical students and medical residents.

On the same subject in Mexico, a study by Alcorta et al. (2005) was found in the Faculty of Medicine, of the Autonomous University of Nuevo León, Monterrey using the Jefferson Empathy Scale in 1022 medical students (494 women and 528 men) with the "S" version of the EEMJ-S designed to measure empathy in medical students, obtaining results of the exploratory analysis of the three factors, "domain of perspective taking", "domain of care with compassion" and " Mastery of the ability to put yourself in the patient's shoes. " Concluding that as long as the doctor is willing to understand what the patient thinks and feels, the better the care he will offer in this way will make empathy an indispensable means of the doctor-patient interpersonal relationship. In this research, measuring empathy is the first step to examine your level of permanence from the time you enter your degree to the moment of choosing a medical specialty since it also allows you to analyze the impact of educational strategies aimed at increasing empathy, with potential benefits for the professional development of the doctor and the health of his patient.

Gallardo, (2011) also carried out a study in the Faculty of Medicine of a terminal line in Education, of the Autonomous University of Querétaro with the aim of corroborating the change of Attitude in the doctor-patient relationship in residents of Family Medicine, this later to an educational intervention in bioethics with a participatory and reflective approach. Where they concluded that it is possible to improve the doctor-patient relationship, communication and empathy of residents through educational intervention in participatory and reflective bioethics.

In turn, García, (2013) from the Autonomous University of Mexico in support of the 249 Family Medicine Unit in Tlaxcomulco, State of Mexico, conducted a study of 20 attached doctors and 260 patient users of that unit, applying the Jefferson scale to evaluate The perception of the patient regarding the empathy of their doctor in that family medicine unit, within the results obtained, it was found that health professionals with an age between 31 and 35 years presented better empathy than those of 51 years in Going forward, regarding the score according to the specialty was not significant, therefore they said that this could be related to the fact that the family doctor and the general doctor would have to have better behaviors to improve their communication with the patient and therefore their medical performance, They also reported on the years of working life, concluding that the level of empathy remains stable during the first years of form ation and professional practice and then decreases.

Márquez (2014) using Jefferson's perception of empathy scale for patients in the Family Medicine Unit 66 of Xalapa, Veracruz, where his objective was to correlate the satisfaction of the doctor-patient relationship with the level of empathy of the physician and the perception of this for the patient. Concluding that patient satisfaction is a measure of health care outcome, and that it is generally at moderately high levels, interpersonal exchanges between physician and empathically compromised patient have been shown to improve medical practice and help to heal. So the first step that the doctor must take to humanize care in health areas, is to admit that he must first humanize himself, reflecting to find ways and resources that allow him to integrate science with humanism than the practice of health requires.

In this regard, Márquez (2014) argues; Many times the doctor stops visiting the arts and the humanities and deprives himself of other ways of knowing the world, people, things; he loses the ability to admire himself and feel that most of the phenomena that surround him do not depend on him. This break between the professional being and the human being, even having catastrophic consequences, is not intentionally caused. Perhaps that is why, because it is not something that one chooses, one does not feel responsible for it, and sees it as something imposed by the system, or by the natural evolution of medical practice. (p.12)

As pointed out in the various investigations carried out, some authors recommend that health educators design additional strategies that improve reflection and empathic behavior in students, specifically in clinical practice, to become a role model, thus achieving ultimate goal which is to improve the quality of patient care.

Methodological framework

Design and approach

Hernández and Mendoza (2008) refer to the fact that the research design is the action plan that is followed to meet the stated objectives and corroborate the hypotheses. In relation to this, the present study is of non-experimental design, since it is carried out without deliberately manipulating the study variables, it is limited to observing the phenomenon as it occurs in its natural context and then analyzing them, this design is basic for mixed studies.

Where, Pulido (2014) for his part says, that qualitative research tries to identify, basically, the deep nature of realities, their dynamic structure, the one that gives full reason for their behavior and manifestations and the qualitative (which is the whole integrated) is not in any way opposed to the quantitative (which is only one aspect), but implies and integrates it, especially where it is important. He also says that qualitative research is an activity that locates the observer in the world, it consists of a set of interpretive practices that make the world visible. These practices transform the world, turning it into a series of representations, including field notes, interviews, conversations, photographs, records, and memoirs.

In relation to this, the scope of an investigation is based on the data collection and sample selection strategy, and may have more than two research scopes, therefore, this investigation is a cross-sectional or transectional study. Because it collects data in a single moment, likewise exploratory studies, serve to make a diagnosis and precede the descriptive scope, which are the proper basis for such research.

The great complexity and uniqueness of many of the human phenomena make it impossible for there to be a rigid and pre-established modality of qualitative research, qualitative research is, in essence and inevitably, multi-method and plural (Crisol, 2011).

In this sense, quantitative research arose in the 18th and 19th centuries, in the process of consolidation of capitalism and within western bourgeois society. From its origins its purpose was to analyze social conflicts and the economic fact as a complex universe. Inspired by Newtonian natural sciences and physics based on Galileo's knowledge (Mendoza, 2006).

The main characteristic of this methodology is that it allows the data to be examined numerically, especially in the field of statistics. Mendoza (2006) says that for there to be a quantitative methodology, it is required that among the elements of the research problem there is a relationship whose nature is linear, that is, that there is clarity between the elements of the research problem that make it up, that it be It is possible to define it, limit them and know exactly where the problem begins, in which direction it is going and what type of incidence exists among its elements. These elements are called variables, relationship between variables and unit of observation.

Hernández, (2008) argues that today we cannot approach complex phenomena from a single perspective and discipline, and that is the reason why the need to use the mixed approach or method arises, since the vision of these methods is interdisciplinary and they arose due to the complexity of certain phenomena under study such as;

Human relations

1. Diseases

2. The Teaching

3. The media, among others.

In the field of educational research, mixed studies have been multiplying rapidly, proof of this is the note that in October 2003, appears in the prestigious publication Brilish Educational Research Journal, which edited a special issue to celebrate and include "some of the best recent studies" in the field of educational research, eight in total, of which six were mixed (Scott , 2007).

Population and sample

The population was made up of the total number of students from first to fifth year of the afternoon shift of the dental faculty of the Autonomous University of Sinaloa, located in a university city, in Culiacán, Sinaloa, Mexico.

Criteria for inclusion and exclusion of the sample

The type of sample used in this investigation was of convenience, also called as deliberate selection, since it is the one that is available at the time or period of the investigation and consists of the choice by non-random methods whose characteristics are similar to those of the population. Here the sample is made up of those that are most convenient, the closest individuals are selected to participate and the process is repeated until the desired sample size is obtained (Espinoza, S., 2016).

In the inclusion criteria, all those students who were willing to participate and were in direct interaction with patients in clinical practice were taken into account, therefore, all those students who voluntarily decided not to participate despite being current in clinical practice with patients.

Subjects and scenario

This research was carried out with students from the afternoon shift of the Faculty of Dentistry of the Autonomous University of Sinaloa, located in Ciudad Universitaria, in the city of Culiacán, Sinaloa, Mexico, in the period from September 2014 to May 2015 .

The investigation was carried out in three stages:

First stage (Diagnosis). 364 students from first to fifth year participated in it, of which 244 were women and 120 were men of bachelor's level.

The objective in this diagnostic stage was to measure the level of empathy, both gender and educational level.

Second stage (Workshop and Interviews). For the workshops, the sample consisted of 92 third-year students, of whom 64 were women and 28 men. And 14 students participated in the interviews, 8 of whom were women and 6 men.

Third stage (Observation and application of scale to patients) for observation was carried out with three pairs of students and one patient in each case, and 48 patients participated in the application of the patient perception scale, 29 of whom were women and 19 men.

Techniques and instruments of data collection

The survey technique was used with the application of the Jefferson Empathy Scale in its Spanish version and adapted for students in training (EEMJ-S) recovered from Oviedo (2011), Annex 1. As an instrument to establish the level of empathy of students from first to fifth grade on the afternoon shift.

Process

Initial diagnosis: Application of the Jefferson Empathy Scale in its Spanish version and adapted to students in training (EEMJ-S). In September 2014, at the UAS School of Dentistry located in Ciudad Universitaria de Culiacán, Sinaloa, permission from the Faculty management was requested to carry out this research, explaining in detail its purpose. Once the permit was authorized, the first stage of the investigation was carried out, visiting the students from first to fifth year of the afternoon shift, with the aim of measuring the level of empathy, both by gender and by educational level. In their respective classrooms the purpose of the research was explained to a total of 364 students from first to fifth grade of the afternoon shift (244 women and 120 men). Before starting the study, participants were explained that the questionnaire was about empathy, asking for their personal beliefs and opinions, it was also said that participation was voluntary and that individual responses were confidential and would not be part of their academic record.

After this, the instrument (EEMJ-S) was delivered in its Spanish version and adapted to dental students (Annex 1), the participants wrote down their telephone number and / or email for their participation in the second stage.

Once the instrument was answered, we proceeded to collect it, thanking them for their participation.

Analytical framework

Analysis of results.

The first stage consisted of carrying out the diagnosis with students from first to fifth year in order to investigate the level of empathy in both gender and grade level. In this stage, the Jefferson Empathy Scale in its "S" version (EEMJ-S) Annex 1 was used to measure the level of empathy in dental students, which evaluates under three factors (perspective taking, compassionate care and the ability to put yourself in the patient's place) it should be noted that the term Factor, was modified for this investigation with the name of Level, as shown in (Annex 2) where the EEMJ-S questions are found for each level of empathy.

This instrument (EEMJ-S) has 20 elements, of which 10 are in the positive and 10 are in the negative sense. Their total score varies between 20 and 140, the highest values indicating a behavioral trend of greater empathic commitment to the patient. Respondents indicate their level of agreement to each element on a seven-point Likert-type scale, where 1 = strongly disagree and 7 = strongly agree.

An adequate survey response is defined as having 16 or more of the 20 items on the scale. Therefore, surveys with less than 16 answered questions were discarded from the analysis. The ten elements in the positive sense correspond to the first factor taking empathy perspective and of the ten elements written in the negative sense, seven measure the second factor of compassionate attention and three measure the third factor of the ability to in the patient's place "(Oviedo, 2011).

Analysis of comparisons of levels of empathy first stage.

In the data processing for analysis, descriptive statistics were applied, based on the distribution of absolute and relative frequencies (percentages), measure of central tendency, arithmetic mean and measure of variability, as well as standard deviation. For the indices and indicators derived from inferential statistics, the one-way ANOVA test and Fisher's F test were used, which were calculated to examine differences in empathy scores related to gender and year of study.

Both descriptive and inferential statistical data analyzes were formed using the SPSS version 18 package with 0.05 as the significance level. For the tabulation of the results, the scores obtained in the questions in the negative sense were inverted using the 8X formula in which X is the assigned value of the question, to positivize the result, and thus achieve that the final average of all the questions has a direct correlation to the level of empathy (Oviedo, 2011).

Because it was the diagnostic stage, it was decided to include all the grades, 364 dental students participated in this stage, the purpose was to have a broad overview of the prevailing situation regarding the knowledge and use of empathy among dentists in training.
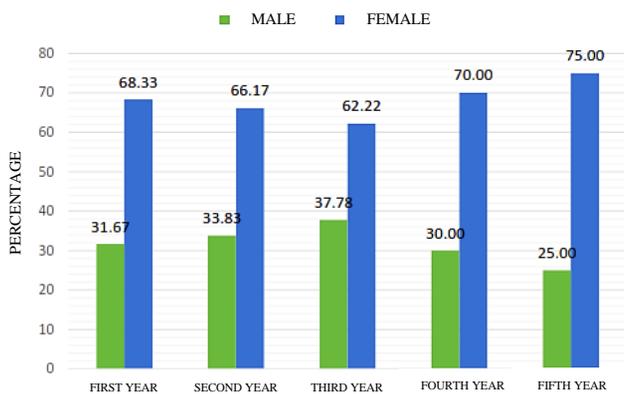

Figure 1 Toral of students participating in the diagnostic stage. FOUAS, 2014
Source: own elaboration, 2015

Figure 1 represents the distribution of the students subject to study according to the years of school and gender, it also shows that in the FO student population of the UAS the female gender predominates (67%) in all academic grades and that the male population (33%) is decreasing as they progress towards the end of the degree.

In figure 1, where the distribution of participants by school grade is shown, of the 60 first-year students, 19 (31.67%) were male and 41 (68.33%) were female. Regarding the second year, of the total of 201 students who participated, 68 (33.83%) were male and 133 (66.17%) were female. In the third year, a total of 45 students participated, of which 17 (37.78%) were male and 28 (62.22%) were female. The fourth-year students who participated were a total of 30 students, of whom 9 (30%) were male and 21 (70%) were female. Finally, the fifth year is shown, in which a total of 28 students participated, of which 7 (25%) were male and 21 (75%) were female.

Before continuing and presenting the results of levels of empathy and in order to specify the characteristics that each level of empathy contemplates according to the EEMJ-S, taking into account the contributions made by Oviedo (2011) where he mentions, that in the In the context of health, empathy is described as a concept that encompasses cognitive, affective and emotional development, and as this is an investigation in the area of health, each level of empathy was conceptualized for this investigation:

Level 1 of empathy (perspective taking). At this level, the student will demonstrate being able to attend to the patient from his perspective, trying to think like him, understanding his feelings to achieve a good relationship in the search for a therapeutic strategy that favors the success of the treatment. At this level the student makes use of his cognitive development.

Level 2 of empathy (Attention with compassion). At this level the student will demonstrate that he has the capacity and ability to pay attention to the experiences of his patients, understanding and understanding them as an integral part of dental diagnosis. At this level, in addition to cognitive development, the student incorporates the affective ingredient into the relationship with his patient.

Empathy level 3 (Ability to put yourself in the patient's place). At this level the student will demonstrate that he is able to establish an empathetic relationship with his patients by showing interest in their well-being, demonstrating openness to dialogue, attentive listening, with unconditional positive acceptance and flexibility to adapt to individual differences, thus demonstrating an attitude empathetic towards the patient and their relatives. Both cognitive, affective and emotional development are fused at this level.

In Table 1 and Figure 2, the general average of empathy is presented, as well as by levels according to the results of the application of the EEMJ-S in the students of the faculty of dentistry of the Autonomous University of Sinaloa.

General empathy	Level 1 = Factor 1	Level 2 = Factor 2	Level 3 = Factor 3
103.4 ± 13.04	58.3 ± 7.41	33.3 ± 8.35	11.8 ± 3.71

Table 1 Level of Empathy in Students of the Faculty of Dentistry, UAS, 2014
Source: own elaboration, 2015

Table 1 and Figure 2 reveal that the level that presented the highest score was level 1 of empathy (Perspective taking) followed by level 2 (Attention with compassion) as well as later level 3 (Ability to put yourself in the patient's place). These results are revealing in that most of the students are at a level of cognitive empathy where they try to understand their patient seeking to gain their trust so that they can carry out dental treatment.

Likewise, just under half show that according to their responses they have the capacity and (affective) ability to understand and understand their patients, and a minority feel (emotionally) capable of establishing an empathetic relationship with their patient. . In this regard, Casabuenas (2007) comments that doctors have to improve communication skills, managing their own and other people's emotions to correct their clinical practice.

Analysis of empathy levels in dental students by first stage school grade.

In the statistical analysis to know the level of empathy according to EEMJ-S of the different school grades of the students of the UAS School of Dentistry, Table 2 and Figures 3 and 4 show that the general average of students showed that they did not exist significant differences between the general level of empathy and school grades, but when analyzing the results by levels, it was found that third-year students (37,044 ± 7,192) followed by first-year students (34,733 ± 9,536) showed high scores at level 2 of empathy (Attention with compassion) (F (4,359) = 4.25; p = 0.002).

This was striking, since the first-year students still do not have direct interaction with patients, which indicated that the results were probably emitted from cognitive development in the assumption of how empathetic treatment should be with the patient and family members of the same during the dentist-patient relationship.

In the case of third-year students, it could be argued that their knowledge on the subject of empathy and empathetic interpersonal relationships in the treatment of the patient was present because it is at that grade level when they are studying the subject of medical psychology , which is the educational program that contemplates these learning.

In addition, it was striking that in the fourth and fifth year the scores decreased, which led to the assumption that students require continuous training on topics that address empathy, its importance and use, in order to stay motivated towards the practice of empathetic relationships with his patients.

Component	Grade	N	Medium ± SD	Tuckey	Statistics
Empathy	1st	60	105.68 ± 14.32	A	$F_{(4,359)} = 1.80$; P=0.129
	2nd	201	103.27 ± 14.34	A	
	3rd	45	107.09 ± 12.16		
	4th	30	100.57 ± 12.37		
	5th	28	100.54 ± 12.00		
Level 1	1st	60	29.300 ± 8.552	A	$F_{(4,359)} = 0.61$; P=0.653
	2nd	201	58.244 ± 7.786	A	
	3rd	45	57.956 ± 7.164	A	
	4th	30	59.100 ± 7.265	A	
	5th	28	56.821 ± 6.29	A	
Level 2	1st	60	34.733 ± 9.536	A	$F_{(4,359)} = 4.25$; P=0.002
	2nd	201	32.498 ± 8.242	AB	
	3rd	45	37.044 ± 7.192	B	
	4th	30	30.400 ± 8.365	AB	
	5th	28	31.857 ± 8.392	B	
Level 3	1st	60	11.65 ± 3.635	A	$F_{(4,359)} = 1.27$; P=0.280
	2nd	201	12.532 ± 4.351	A	
	3rd	45	12.089 ± 3.423	A	
	4th	30	11.067 ± 3.393	A	
	5th	28	11.857 ± 3.739	A	

Table 2 Level of Empathy in Students of the Faculty of Dentistry, by Grade, 2014
Source: own elaboration, 2015

Table 2 represents the general average that shows that there are no significant differences between the degrees of study (F (4,359) = 1.80; p = 0.129), also level 1 (perspective taking) (F (4,359) = 0.61; p = 0.653) and level 3 (ability to put yourself in the patient's place) (F (4,359) = 1.27; p = 0.280) did not show significant statistical differences between their general averages, results that are presented in the following figure.
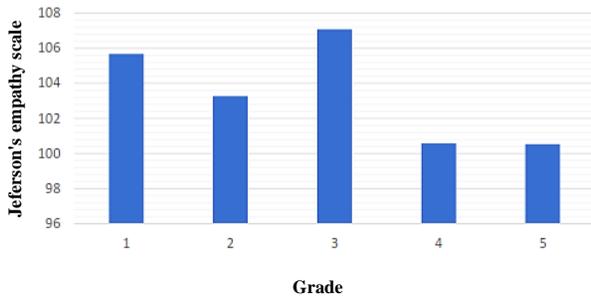

Figure 3 Level of empathy by grade in students, FOUAS, 2016
Source: own elaboration, 2015

In figure 3 the general level of empathy is graphed by school grade, where it is evident that the third-year students in training at the dental school presented the highest score, with the last grades of the degree course having the lowest scores in the level of empathy.
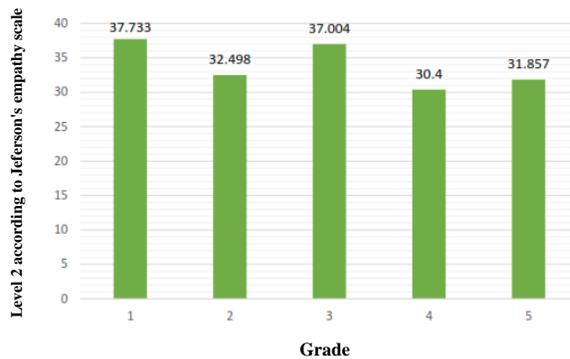
Figure 4 Level 2 of empathy by grade in FOUAS students, 2014
Source: own elaboration, 2015

In Figure 4, Level 2 of empathy is represented according to the EEMJ-S by grade, where students of third and first grade of dentistry from the UAS obtained the highest score, which was thirty-seven percent.

Analysis of empathy levels in dental students according to gender first stage.

In order to know the level of empathy according to the EEMJ-S according to the gender of the students of the dental faculty of the UAS, statistical analyzes of the general average were carried out. The results showed as indicated in the table 3 and figure 5, that the female gender presented a higher level of empathy with respect to the male gender and that in the analysis by levels, level 2 of empathy (compassionate attention) presented the highest score among women with respect to men.

It should be noted that level 1 (perspective taking) and level 3 (ability to put yourself in the patient's place) did not show information with significant differences. Given these data, it was necessary to point out that these could be affected by the evident difference that existed between the student population by gender, where women represented the vast majority (67%).

Component	Gender	N	Medium ± SD	Tuckey	Statistics
Empathy	Female	244	104.85 ± 14.03	A	$F_{(1,302)} = 5.08$; P=0.025
	Male	120	101.39 ± 13.17	A	
Level 1	Female	244	58.824 ± 7.903	A	$F_{(1,302)} = 2.91$; P=0.089
	Male	120	57.367 ± 7.15	A	
Level 2	Female	244	33.852 ± 8.230	A	$F_{(1,302)} = 4.30$; P=0.039
	Male	120	31.892 ± 8.97	B	
Level 3	Female	244	12.172 ± 4.045	A	$F_{(1,302)} = 0.01$; P=0.931
	Male	120	12.133 ± 3.994	A	

Table 3 Level of empathy in UAS dental students by gender
Source: own elaboration 2015

Table 3 shows the level of empathy by gender presented by dental students at the UAS, where the marked difference between the male and female gender scores is observed.
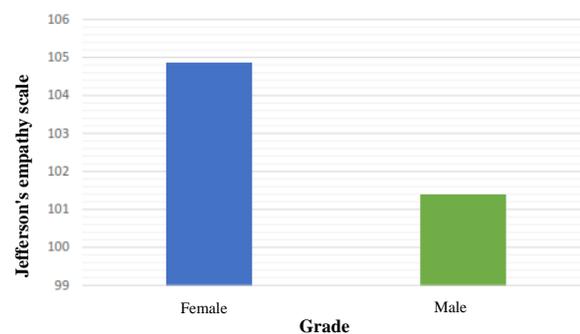

Figure 5 Gender empathy level in FOUAS students, 2015
Source: own elaboration 2015

Figure 5 shows the graphic representation of the significant difference in overall level of empathy according to gender in dental students at the UAS where the female gender presents the highest score.

It should be noted that the results of the diagnosis provided important data on the objectives established in the research, where it was found that the majority of the student population at the UAS School of Dentistry are women and that they show the greatest empathy with the patient, it was also found that the male population decreases as they advance in the race.

Meanwhile, level 1 of empathy (perspective taking) was the one that presented the highest score in general and by specific levels, it was level 2 of empathy (compassionate attention), the one that prevailed among third and first year students respectively.

These results provided foundations for continuing with a second stage, in the search for elements that support the implementation of educational strategies that favor the development and strengthening of empathy in dental students, since, as Hoffman (2002) argues, empathy is a evolutionary process, a predisposition that develops from childhood to adulthood incorporating the system of social and moral values, also says that the affective and emotional components influence the use of moral principles and the behavior that the subject decides to carry out.

So taking into account all of the above, we proceeded with the second stage of the investigation, since as Ausubel (2002) adds, the human experience not only implies thought, but also affectivity and when considered together, the individual is trained to enrich the meaning of your experience.

Conclusions

In this research where the first objective was to measure the level of empathy of the students, it was confirmed that the Jefferson Medical Empathy Scale has potential utility to measure empathy in dental students, managing to demonstrate that the average level of empathic orientation obtained by the students of the UAS School of Dentistry it is similar to that of their counterparts in other countries where EEMJ-S has been applied.

It is necessary that subsequent studies consider the perspective of the dentist-patient, in order that both know them, and there is mutual participation, it must be established on the basis of respect and humanized care, as well as listening to the patient in a qualified and To do so participate in the factors that influence dental care and treatment, since the dentist-patient relationship must be linked to the integral vision of the human being.

Future studies, preferably longitudinal in design, should explore the changes in empathy among dental students during their development through their academic training, as well as assess the initiative to implement workshops or elective courses that favor the development and strengthening of empathic interpersonal relationships between teachers-dentists and patients.

It is important to consider that, although the changes are not definitively achieved for those who participate, at least, it is a start for future health professionals to start working with their own emotional health and this allows them later serve your community more comprehensively.

Learning knowledge, content, attitudes and ways of relating are not incompatible, that is why this research sought to make the mission of the UAS School of Dentistry a reality, which is: "To train dentists with academic and human quality, with high ethical sense capable of generating knowledge to contribute to the prevention and cure in the health of the population "(Ramírez, 2011. p.22).

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

What is your added value with respect to other techniques?

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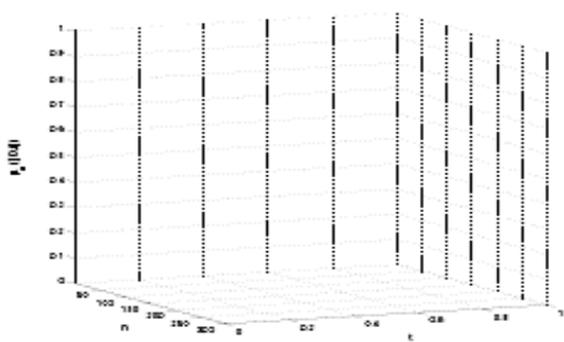
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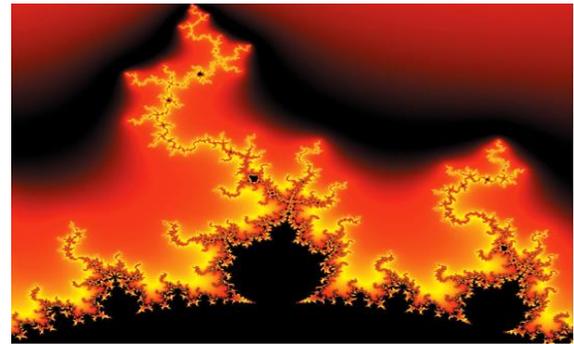
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Methodology

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

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Tables and adequate sources

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