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# **Journal of Human Resources Training**

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## Presentation of Content

In the first article we present, *The importance of tutorial action in the improvement of educational quality with a human perspective at the Universidad Autónoma de Querétaro (UAQ)*, by SALVADOR-LEDESMA, Martha, PÉREZ-BRAVO, Julia and CAMACHO-MOTA, Sandra Adriana, with adscription in Universidad Autónoma de Querétaro, the next article we present, *Trends and challenges in the upskilling and reskilling of the workforce in the 21st century: an analysis of the strategies and results in the acquisition of skills for adaptation to technological and labor change*, by RUÍZ-VALDÉS, Susana, RUÍZ-TAPIA, Juan Alberto and GÓMEZ-CHAGOYA, Ma. Carmen, with adscription in the Universidad Autónoma del Estado de México, the next article we present, *The well-being of teachers favored by emotions, integral human development and the organizational climate*, by MIRANDA-ROBLES, Tomasa & SANDOVAL-SANTOYO, José Guadalupe, with adscription in the Universidad Pedagógica Nacional, the next article we present, *Body mass index and agreement with self-perception of body image in adolescents from Mochitlán, Guerrero*, by DÍAZ-SÁNCHEZ, Jennifer Guadalupe, CAHUA-PABLO, José Ángel, FLORES-ALFARO, Eugenia and VENCES-VELÁZQUEZ, Guillermina, with adscription in the Universidad Autónoma de Guerrero.

Content

Article	Page
<b>The importance of tutorial action in the improvement of educational quality with a human perspective at the Universidad Autónoma de Queretaro (UAQ)</b> SALVADOR-LEDESMA, Martha, PÉREZ-BRAVO, Julia and CAMACHO-MOTA, Sandra Adriana <i>Universidad Autónoma de Querétaro</i>	1-12
<b>Trends and challenges in the upskilling and reskilling of the workforce in the 21st century: an analysis of the strategies and results in the acquisition of skills for adaptation to technological and labor change</b> RUÍZ-VALDÉS, Susana, RUÍZ-TAPIA, Juan Alberto and GÓMEZ-CHAGOYA, Ma. Carmen <i>Universidad Autónoma del Estado de México</i>	13-20
<b>The well-being of teachers favored by emotions, integral human development and the organizational climate</b> MIRANDA-ROBLES, Tomasa & SANDOVAL-SANTOYO, José Guadalupe <i>Universidad Pedagógica Nacional</i>	21-30
<b>Body mass index and agreement with self-perception of body image in adolescents from Mochitlán, Guerrero</b> DÍAZ-SÁNCHEZ, Jennifer Guadalupe, CAHUA-PABLO, José Ángel, FLORES-ALFARO, Eugenia and VENCES-VELÁZQUEZ, Guillermina <i>Universidad Autónoma de Guerrero</i>	31-37



The importance of tutorial action in the improvement of educational quality with a human perspective at the Universidad Autónoma de Querétaro (UAQ)

La importancia de la acción tutorial en la mejora de la calidad educativa con perspectiva humana en la Universidad Autónoma de Querétaro (UAQ)

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Abstract

In this article we describe tutoring actions which transcend in the quality of education and have an impact on the students’ human behavior in society. In the next sections we address different perspectives on performing tutoring actions. These actions are fundamentally based on identifying the students’ circumstances and designing the best actions to accompany, orient, guide and direct them in their learning process and integrated development. This considering that the teachers training and integrated development are relevant to accomplish good practice in the students. Thus, affectionate relationships will be established based on respect, comprehension, and acceptance.

Alterity, Educational quality, Humanistic approach, Tutoring, UAQ

Resumen

En este artículo se describen las acciones que desde la tutoría trascienden en la calidad de la educación e impactan en el comportamiento humano de los estudiantes en la sociedad. En los apartados se abordan las diversas perspectivas para llevar a cabo acciones tutoriales, se basan fundamentalmente en identificar las circunstancias de los estudiantes y en diseñar las mejores acciones para poder acompañarlos, orientarlos, guiarlos y dirigirlos en su proceso de aprendizaje y desarrollo integral. Esto tomando en cuenta que la capacitación y el desarrollo integral del docente son relevantes para lograr las buenas prácticas de los estudiantes. Así, se establecerán relaciones afectivas basadas en el respeto, la comprensión y la aceptación.

Alteridad, Calidad educativa, Enfoque humanista, Tutoría, UAQ

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## Introduction

Globalisation has revolutionised countries in all areas, and education has been no exception; it has been equipped with the most innovative technological tools for the development of teaching-learning, because students currently mistakenly think that computers, telephones, tablets and other devices are what provide them with the teaching and education they need for their professional development, leaving aside what is really quality in education, which lies in training centred on the student as an active subject who learns personal and professional competences autonomously.

Universities have different teaching-learning models, as well as tutoring models, which must be adapted and implemented according to the cultures and traditions of each country and, consequently, according to the needs of each university community.

Student satisfaction is the indicator that the tutoring and its actions are being carried out with the quality that education currently requires. The results, student comments and recognition of the tutoring are part of the evaluation that the tutored students make of all the activities designed for their academic, personal and professional development, in which they have been accompanied, guided, advised and supported with their skills, abilities, knowledge, attitudes, values, aptitudes and competences based on their diverse specific educational needs.

Tutoring is the opportunity for the teacher-tutor to share with the students all the knowledge, experiences, anecdotes, thoughts, feelings, actions that have been generated before entering the university and, at the same time, those that are being generated during the course of the course. It is important to work on empathy and otherness with the students in order to seek the good of the other.

## Development

### *The history of mentoring*

Tutoring is characterised as a guiding activity as a function of the teacher, as mentioned by González (2016), with the aim of accompanying each group and student in a personalised way, guaranteeing comprehensive development in all areas in which the student develops (Ramos, 2008). The importance given to tutoring from primitive communities to the present day focuses on the development of skills, attitudes and aptitudes, among others, for the growth and evolution of the human being in the academic stage.

Teachers carry out tutoring functions with an informal perspective, due to the fact that sometimes students approach teachers who do not have this designated activity, but feel identified and empathetic, thus creating contact with students and dialogue on those concerns that characterise and differentiate them from each other. Being a teacher makes it possible to transmit specialised knowledge, to be an example and mentor for good practices and decision-making, which students base on their own critical analysis.

The first contact with students is in the classroom, in which a confusing perspective is generated by not having a previous knowledge of them, however, the daily coexistence gives us the opportunity to know them through a long-term process, because not everyone has that openness to develop confidentiality oriented to the development of a comprehensive education.

Tutoring is based on prior knowledge of the student through a socio-economic and cultural diagnosis, learning style among others, which will help us to analyse the conditions in which the student is, as well as the interests and aptitudes, for the teaching-learning process with the aim of generating new knowledge for the potential development of the student.

The interest in the university community, and in the fact that the teacher's intrinsic element is tutoring, this must be carried out with professionalism and dedication for all students, applying the 3 main components of the UAQ University Educational Model (2017) such as principles and values; pedagogical approach and educational innovation, which offer and guarantee a quality and comprehensive education in our students trained in knowledge, aptitudes, attitudes, values, skills, critical analysis and decision-making for their development and contribution to society as human beings and professionals.

As mentioned in the "White Paper for the Reform of the Education System" (1989), tutorial action is an activity inherent to the teacher and is indispensable for promoting the development and growth of students in relation to their learning in the classroom, but also with the skills and aptitudes for their development in a society that requires competencies in all aspects; and for this, the teacher profile must be appropriate for their functions through constant updating that allows them to improve their abilities, skills and knowledge, which drives their interest and that of the student for mutual development.

The importance of tutorial action lies beyond the classroom with an academic approach, we are talking about accompanying students for their development and personal growth within a society, which is under the laws, programmes, guidelines, strategies and other aspects controlled by the government of each country as a global alliance; It is mentioned in the Millennium Development Goals Report (United Nations, 2014) as a strategic line, however, actions continue to be taken that do not allow this development as less aid to the poorest countries, and from there, all the events that generate that young people do not have a youth full of opportunities and access to nutritious food, health and hygiene, basic services, education, work, better income, integrated and stable families arise.

All this because from the global perspective of developed and developing countries, they do not consider that the poorest countries are the ones that need help to promote the development of their inhabitants from maternal health to the exercise of their work activities, taking into account that the life of the human being is a chain: we are born, we grow, we reproduce and we die, but during this process we must go through a range of decision making in the different spheres and stages of life.

It is clear that it is not only the government's task to provide us with everything we want or desire, but to offer the best opportunities in all sectors through programmes or strategies that provide us with tools to accompany and complement our students from childhood to youth, supporting them in their self-knowledge, establishing objectives and goals with the responsibility of decision making in their actions towards them and the society in which they are developing, which is currently immersed in the TICS (Information and Communication Technologies) taking them as part of their training, learning, entertainment, fun, fashion, consumerism and more functions that they give them, leaving aside the main objective which is the development of new skills and abilities to be competitive with the new knowledge acquired.

Currently there is a need to work on virtual tutoring, and it is to be expected because of all the events that we are going through, however, there will be a lack of certain characteristics that identify virtual tutoring, mainly the one that lies in identifying the profile or role of virtual tutoring, functions, competencies and skills of this, in order to meet the objectives set. (Almenara & Graván, 2006) determines the following functions for virtual tutoring: technical, academic, organisational, guiding and social; these will be applied as necessary for the guidance, support and accompaniment of students.

The strategic lines for sustainable development are necessary and indispensable for the growth and development of young people worldwide, which is why we must work together with the government, schools, teachers, families and society so that we all contribute our part to generate youth with plenitude through all the established objectives that will enrich us as a society.

### *University Educational Model and Institutional Tutoring Programme UAQ*

The UAQ (2017) considers that tutoring is a strategic tool that contributes to the consolidation of educational quality through direct attention to students in order to contribute to the achievement of professional competences, social performance and their comprehensive development.

The Institutional Development Plan PIDE (2007-2012) states as its main objective the consolidation and improvement of educational quality, establishing as a policy the consolidation of the University Educational Model.

One of the strategies highlighted in the PIDE (2007-2012) is to consolidate the institutional programmes of tutoring, mobility, vocational and professional orientation and graduate follow-up that contribute to the increase of terminal efficiency and incorporation into employment.

The conception of the University Educational Model (MEU), UAQ (2017) constitutes "the concretion in pedagogical terms of the educational paradigms that an institution builds, a concretion that serves as a reference for all the functions it fulfils (teaching, research, extension, liaison and services), in order to make its educational project a reality".

The University Educational Model is made up of three fundamental components for University Education: the first includes principles and values, the second includes the pedagogical model and the third includes educational innovation.

The Institutional Tutoring Programme (PIT) is included in the UAQ Educational Model, contributing to providing a comprehensive education. The University Educational Model (2017) conceives educational quality as the act of "training professionals with scientific, technical and humanistic knowledge, with critical and creative thinking, with the ability to solve problems and with values, through research, links and educational programmes, teachers and adequate facilities, linked to satisfying social needs and capable of sustainably transforming their lives and their environment".

The MEU in its pedagogical approach will recognise the student and his or her formation as the centre of all academic efforts. It will require the updating and training of teachers for its exercise, and the collegial work of teachers and the constant and permanent analysis of their teaching practice.

Innovation is closely related to the use of Information and Communication Technologies (ICT), which are recognised as a means (not an end) that helps and achieves learning.

The Institutional Tutoring Programme (PIT-UAQ) is marked within the humanist philosophy (comprehensive training, promoting the human spirit towards all worthy knowledge). The tutoring contemplates three main qualities: empathy, authenticity and congruence, fostering a climate of trust, reflection, spontaneity, which can generate an increase in the self-evaluation of the student being tutored.

Values and premises that guide and sustain the PIT: congruence, pertinence, realistic, democratic, timely, multidisciplinary, measurable and committed.

Contributing to the strengthening of the Educational Model is one of the objectives of the ITP.

To implement strategies to help students meet the objectives of the educational programmes and become competitive professionals in the disciplinary and work environment.

Tutoring is the individual and sometimes group accompaniment and teaching support offered to students as another activity in the curriculum, aimed at strengthening their professional life project.

Human beings want to live in a pleasant physical environment, in social harmony, in calm and safe places and in a community that allows them to live a style compatible with their social and cultural aspirations.

(Amar Amar, 2002) confirms that the real wealth will be in the "process that the knowledge society in the globalised world is becoming more and more complex; tradable goods and services require more and more technical progress (more information, more knowledge, more innovation).

What the knowledge society demands of the university is the same condition that is demanded of a company or a person: "to be successful" (Amar Amar, 2002).

The knowledge society does not only imply economic, scientific and technological changes, but also a profound change in values.

University institutions today have, along with their training and educational tasks, the unavoidable commitment to carry out scientific research in order to generate, adapt and disseminate knowledge and technology (Amar Amar, 2002).

University education in the region must seriously concern itself with virtualisation, so as not to fall too far behind, thus widening the digital divide.

(Amar Amar, 2002) determines that today it is possible to imagine universities where teachers and students work from their homes, cars or even in the street, thousands of kilometres away from each other, in different countries, using advanced communication and computer technologies, accessing a new international community in which it is possible to move virtually in real time through cyberspace, without limitations of distance or physical or political borders.

It is necessary to generate an entrepreneurial spirit in students by developing new personal and professional skills and capabilities to successfully face the changing world they will live in.

To train, says Pariat, "is in some way to standardise. Thus, in teaching, in transmitting, in tutoring, the ultimate aim is to seek the integration that will enable young people to build a personal, social and professional identity".



**Figure 1** Components and characteristics of the University Educational Model, MEU Planning Notebook (2017), p. 117

### *Otherness as a functional paradigm in tutoring.*

González (2016) cites that tutoring is a guiding activity as a function of the teacher with the aim of accompanying each group and student in a personalised way, guaranteeing comprehensive development in all areas in which the student develops as an individual or in society. Taking into account the above, we can interrelate otherness at the moment when the positive teacher protects the other (student), in his essence, respecting his beliefs, culture, religion, interests, background, tastes, concerns and learning styles, being a responsible, unconditional delivery, with values, affirming the virtues as an educator and person, establishing responsible, ethical relationships between dissimilar beings for the construction of scenarios favourable to life and to the processes of humanisation.

Teachers must have affective, cognitive, investigative, technological and other devices that allow the development of ethical and suitable intervention that has an impact on the formation of people who can face the dynamics of the world in which they live and contribute to the generation of better worlds (Arboleda J. C., 2011).

The educator is immersed in a process that involves doing more than just teaching, something that goes beyond intervening in the development of knowledge, know-how, knowing how to be, knowing how to live together of each of the learners (Amar Amar, 2002).

We must be attentive to the situation of each learner, as stated by (Romero Sánchez & Pérez Morales, 2012), "in the singularity of their existence". If the school (the teacher) welcomes the student in his or her uniqueness as a person, and ensures that he or she appropriates and uses knowledge to promote his or her own inclusive, social, cultural, ecological, ethical and other life projects, then he or she gains levels of comprehensive complexity.

The pedagogy of otherness finds in the formation in values an authentic way to promote relationships of otherness, related to the comprehensive-educational pedagogy promoting the integral formation of subjects who can act and live with dignity, with ethical values and aesthetic attitude, being able to apply knowledge in different contexts, but with social and human sense (Amar Amar, 2002).

It is important to quote (Ortega Ruiz, 2004), interest in others, empathy, concern for community affairs, solidarity, tolerance, civic-mindedness, etc., have not been part of the baggage of an educated person, hence the lack of values in society that results in indifference and apathy for the situations experienced by others.

The educator is immersed in a process that involves doing more than just teaching, something that goes beyond intervening in the development of knowledge, know-how, know-how to be, know-how to live together of each of the learners.

We must be attentive to the situation of each learner "in the singularity of his or her existence" (Romero Sánchez & Pérez Morales, 2012). If the school (the teacher) welcomes the student in his or her uniqueness as a person, and ensures that he or she appropriates and uses knowledge to promote his or her own inclusive, social, cultural, ecological, ethical and other life projects, then he or she gains levels of comprehension complexity.

The pedagogy of otherness finds in the training in values an authentic way to promote relationships of otherness, related to the comprehensive-educational pedagogy promoting the integral formation of subjects who can act and live with dignity, with ethical values and aesthetic attitude, being able to apply knowledge in various contexts, but with social and human sense (Arboleda J. C., 2014).

Educating with a humanistic approach as proposed by the UAQ in its MEU reminds us of the responsibility we have for others and forces us not to be indifferent, but helpful and empathetic with the student.

The educational style within pedagogy is determined by two basic values: dialogue and compassion (Ortega, 2014). Dialogue is assumed as presence and active communication within the educational relationship, in such a way that the value of compassion goes hand in hand with it (Lévinas, 1993). Compassion that allows us to perceive and understand the suffering of others, with the desire and action to reduce or alleviate the painful situation, linked to the empathy that we must demonstrate in the tutorial action and that allows us to have an in-depth vision of the situations experienced by the students.

It is for this reason that classrooms must be spaces where moral learning is developed, an expression of encounter, friendship, trust and responsibility in order to educate students with values, ethics and morals and to fulfil the humanistic approach.

#### *Teacher training and tutoring*

The new challenge for university teaching is for teaching staff to understand tutoring as a space for learning and for the integral maturity of students in all senses, according to (Pérez, 2012).

It is known that teaching staff have many academic activities and that on many occasions this time does not allow for quality tutoring, however, it is important to take into account that it is a responsibility to be a tutor and that if we have designated tutors we must provide quality time and actions that accompany our students in their integral and academic development.

Education is demanding a new university professional, a trained teacher whose attitude towards diversity, training, the resources and support they receive, organisational strategies and the teaching development they adopt are of particular importance (Pérez, 2012).

Each teacher has professional and comprehensive training, because he/she developed in a university environment in which he/she was accompanied by a tutor who knew how to guide and direct him/her according to these experiences, enriching his/her tutoring, taking as experience the experiences and objectives achieved throughout the academic career.

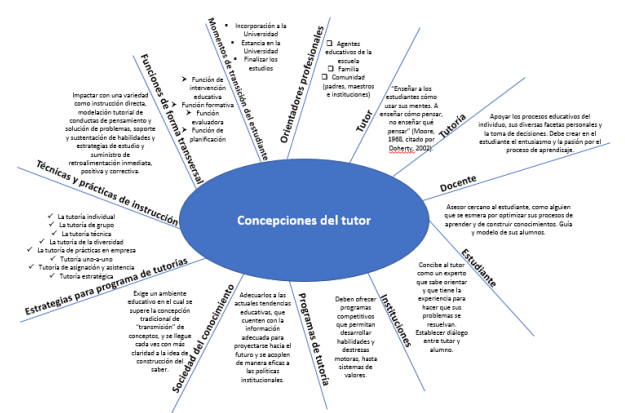
The conception of the tutor from the student's point of view is that of the expert who knows how to guide and who has the experience to make their problems be solved. He/she knows how to do things, including motivating, but also wants to do his/her job (González, 2016).

The student's conception of tutoring is based on the connection they feel to generate trust and share their personal and academic situations, with the aim of obtaining interest and support in order to be guided and accompanied in the solution of their various problems.

During the 19th century, the role of the tutor was about "teaching students how to use their minds. To teach how to think, not to teach what to think" (Moore, 1968, cited by Doherty, 2002).

Mentoring enables the identification of the best alternatives to achieve the highest level of performance and training.

It is relevant, as cited by (Díaz Tamara & Pinzón de Santamaría, 2002), "that each teacher contributes to guiding and advising students in making decisions about their needs, interests and abilities".



**Figure 2** Conceptions of the tutor with different approaches  
Source: own elaboration based on (Ariza Ordóez & Ocampo Villegas, 2004), González (2016) and (Cuesta, 2014)

Types of institutional tutoring

To be effective and efficient, tutoring must be embedded in the teaching-learning process, as it involves a gradual and cumulative aspect of experiences that have their own personal significance for each student (Sancho Sora, Baillo Falo, Vicente Serrano & Larumbe Orraitz, 2006; Clares, Pérez Cuso, & Martínez Juárez, 2014; Álvarez-Pérez, 2014).

The importance of dedicating quality time to students, a quality tutoring programme and a tutoring model lies in providing students with the interest and accompaniment they require according to their particular diagnosis and characteristics, all with the aim of guiding them in their personal, academic and professional development.

The complexity of the training system requires knowing how to choose between models according to the specific university context, the needs of the students and the resources available, adapting the model to the singularity of the training institution (Lobato Fraile & Guerra Bilbao, 2016).

(Lobato Fraile & Guerra Bilbao, 2016) mention the tutoring modalities that can be found in Higher Education institutions, as well as the strategies mentioned by (Argüis, 2001), for the development of tutoring programmes:

Individual tutoring

It is developed between the teacher-student, it focuses on getting to know the student, helps in their academic, affective and social activities, etc.

Group tutoring

The teacher-student develops academic activities and provides relevant information to the teachers who teach the group.

Academic tutoring

Each teacher tutors students, either individually or in a small group, for monitoring or academic advice (work, research, projects, etc.).



*Technical tutoring*

This is academic advice given by a teacher not designated as a tutor, but requested by the student due to his/her experience in the corresponding area.

*Diversity tutoring*

This takes place when the tutor identifies each student's specific abilities, skills and learning pace.

*Work placement tutoring*

The tutors are responsible for the supervision, monitoring and control of the students' work placements in the entities under agreement.

*Degree tutoring*

Accompaniment of the student throughout the degree course, promoting comprehensive development in intellectual, personal and professional aspects.

*Peer tutoring*

This takes place between a new student and a student in the last year of the degree course, oriented towards academic and social matters.

*One-to-one tutoring*

Teachers with learning and teaching development skills can instruct students in skills, study strategies, problem solving, knowledge feedback to a single student.

*Assignment tutoring and assistance*

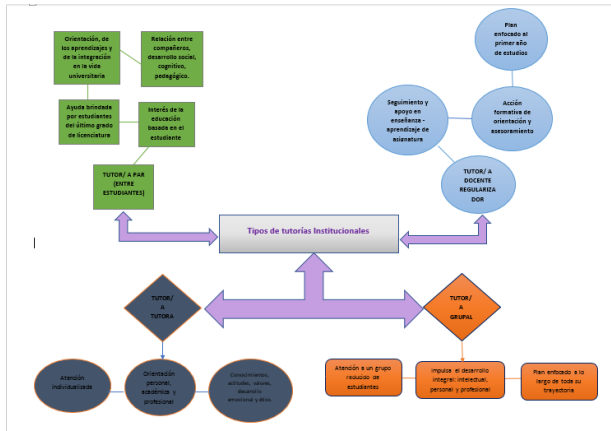
The teacher helps a small group of students to complete their academic work, under appropriate guidance and counselling.

*Strategic tutoring*

The purpose is to teach students learning strategies, such as learning to learn, by accompanying them in the process of developing their assignments and academic work.

According to (Ariza Ordóez & Ocampo Villegas, 2004), the tutoring programmes that should be implemented in university institutions are oriented towards the following:

- Contribute to the integral formation of the individual.
- To generate effective gains in the learning of disciplines.
- To enhance learners' abilities and strengthen their weaknesses.
- To guide participants in the effective and appropriate use of the opportunities available to them.



**Figure 3** Types of tutoring at the UAQ  
Source: prepared by the authors based on (Autónoma de Querétaro, Programa institucional de tutorías UAQ 2012, 2012) (Ducoing, 2009) y (Lobato Fraile & Guerra Bilbao, 2016)

Universities must work committed to their tutorial system under the determined objectives and goals, always counting on the tutor's will and interest for the development of tutorial actions. (Slavin, 1991), argues that the effectiveness of tutoring does not only depend on the model of tutoring that is adopted or on the goals that have been set; it also depends on the tutor's training.

*Supportive circumstances*

At-risk students are identified as students who have problems with failing grades, low achievement and dropout (Uberetagoyna & Galicia, 2009).

It is important that as a tutor we detect in advance the risk that our students present in order to act effectively in the teaching-learning process, with the aim of reducing dropouts and, if necessary, correcting the actions and processes for the student's improvement.



(Pérez, 2012), mentions that psycho-pedagogical intervention will be the guarantor of the quality of universities, which may or may not be excellent to the extent that they are able to ensure that all their students achieve the competences envisaged in their degrees.

The models must be adapted to ensure that each student develops their abilities and skills based on the learning style they master, being a guide for their development and accompanying them throughout their academic career to guide them in the right direction in accordance with their professional approach.



**Figure 4** Circumstances of tutorial support  
 Source: own elaboration based on (Pérez, 2012), (Uberetagoiyena & Galicia, 2009) and Cordellat (2020).

We must be attentive to the risks of the students, the current situation in which we are immersed and the various social and economic changes, are unbalancing our youth who are the most vulnerable, because they find easy ways out, bad influences in decision making, changes of attitude according to their convenience, and an endless number of attitudes that keep them in a fragile state and that we must eradicate, being one step ahead through tutoring and appropriate actions to help them in time, form and reduce the school risk.

### Methodology

In qualitative research we find documentary research as one of the techniques that is responsible for collecting, compiling and selecting information from readings of documents, journals, books, articles, research results, among others; in it the observation is present in the data analysis, its identification, selection and articulation with the object of study (Davila, 2015).

This type of research can also be found as bibliographic research, which is characterised by the use of secondary data as a source of information. Its main objective is to direct the research from two aspects; relating already existing data from different sources and providing a panoramic and systematic view of a given issue elaborated in multiple dispersed sources (Barraza, 2018).

A literature review is, in itself, can form part of the state of the art with which the theoretical references of a research are initiated (Reyes-Ruiz & Carmona Alvarado, 2020).

### Conclusions

In relation to the arguments set out above, it is confirmed that the University Educational Model goes hand in hand with the Institutional Tutoring Programme, with the firm conviction of fully training students during their university career and for their development as people and professionals in a changing social environment.

During the student's stay at the university, it is necessary to use all the tools for the development of skills, abilities, attitudes and skills that will allow the student to grow and make decisions for the desired future and for which they are being accompanied throughout their studies.

It is well known that economic, political and social changes have a great impact on the student's reasoning and critical thinking, which is why it is necessary for tutors to be up to date in all areas in order to provide knowledge and guidance so that the student feels able to discern, interpret and analyse their own context in order to give them the focus and conclusion in relation to their experiences.

Implementing otherness as a paradigm for tutoring at UAQ, should be considered as a priority in the humanistic approach, where the other needs one and that is the first thing that matters for the tutor. One must be responsible for the other and respond to their demands, taking into account their needs and priorities.

Being tutors in this current contingency, should be the guideline to initiate a tutoring of otherness, applying generosity, availability, trust, empathy and sincerity towards the tutored.

Distance, virtual and online academic activities make students vulnerable in the academic, technological, emotional, economic, family and social spheres, which make them fragile when faced with certain decisions, and it is here where tutors must take action to accompany them in this complicated process, based on trust and complicity, generating a relationship of fidelity and cordiality.

Nowadays, human beings are exposed to any kind of vulnerability and the possibility of achieving the desired objectives may be limited, students are more in this situation of fracturing their continuity in the university and, therefore, generating a school risk. So to educate is to respond to the other in their situation, and as a tutor we must be concerned and engaged through tutorial actions that are based on empathy, compassion, help, understanding and responsibility, ensuring our best practices for the success of our university community.

The education of the future needs wisdom, and for this, broad and deep knowledge is required, which is acquired through study or experience, which is acquired through successes or mistakes in accordance with decision-making, under educational principles to interpret the context in which it develops, with humanism to apply it as an individual-society-species.

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Trends and challenges in the upskilling and reskilling of the workforce in the 21<sup>st</sup> century: an analysis of the strategies and results in the acquisition of skills for adaptation to technological and labor change

Tendencias y retos en la mejora y recualificación de la mano de obra en el siglo XXI: un análisis de las estrategias y los resultados en la adquisición de competencias para la adaptación al cambio tecnológico y laboral

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Abstract

The successful implementation of upskilling (improvement of existing skills) and reskilling (acquisition of new skills) strategies in the industry is a crucial process to maintain competitiveness in a constantly changing work environment. It begins with identifying training needs, which can be obtained through interviews, performance analysis, competency assessments, and collaboration with experts. Once skills gaps are identified, customized training programs are designed that include various training methods, such as in-person and online classes, and time is allocated during work hours for employees to participate in these development activities. Progress measurement and continuous evaluation are essential to ensure that employees acquire the necessary skills. Additionally, as technology continues to evolve, a continuous adaptation process is established to keep workforce skills up to date. Ultimately, this approach benefits both the company, by improving efficiency and competitiveness, and the employees, by providing them with opportunities for career growth and adaptation to new technologies.

Skillling, Acquiring strategies job, Competitiveness job, Adaptation, Efficiency job

Resumen

La implementación exitosa de estrategias de upskilling (mejora de habilidades existentes) y reskilling (adquisición de nuevas habilidades) en la industria es un proceso crucial para mantener la competitividad en un entorno laboral en constante cambio. Comienza con la identificación de las necesidades de capacitación, que se pueden obtener a través de entrevistas, análisis de desempeño, evaluaciones de competencias y colaboración con expertos. Una vez identificadas las brechas de habilidades, se diseñan programas de formación personalizados que incluyen diversos métodos de formación, como clases presenciales y en línea, y se asigna tiempo durante el horario laboral para que los empleados participen en estas actividades de desarrollo. La medición del progreso y la evaluación continua son esenciales para garantizar que los empleados adquieran las habilidades necesarias. Además, dado que la tecnología sigue evolucionando, se establece un proceso de adaptación continua para mantener actualizadas las habilidades de la fuerza laboral. En última instancia, este enfoque beneficia tanto a la empresa, al mejorar la eficiencia y la competitividad, como a los empleados, al proporcionarles oportunidades para el crecimiento profesional y la adaptación a nuevas tecnologías.

Desarrollo de habilidades, Competencias laborales, Adaptabilidad laboral, Eficiencia laboral

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Introduction

The contemporary work environment is marked by rapid technological and economic changes that demand a highly adaptive and competent workforce. In this context, upskilling and reskilling strategies have become essential to guarantee the relevance and competitiveness of both organizations and individual workers.

Under this tenor; The objective of the research is to analyze and understand the upskilling and reskilling strategies adopted by organizations and workers in response to technological and labor changes, evaluating their effectiveness to improve employability, adaptability and skill development in the workforce of the XXI century.

Likewise, the following research question is posed: "How do upskilling and reskilling strategies affect employability, adaptability and skill development in the workforce in a work environment characterized by constant technological and labor changes?" "What are the key challenges and best practices associated with these strategies?"

Theoretical framework

Key concepts.

1. Upskilling: Upskilling refers to the process of acquiring new skills or improving existing skills to stay current in a constantly evolving work environment (Guerrero-Egurrola, 2021). This is essential to ensure that employees remain relevant and effective in their roles. Some key aspects of upskilling include:
  - Upgrading Existing Skills: Employees can upgrade their current skills to adapt to new technologies, methods or approaches being used in their field.
  - Acquiring New Skills: It also involves learning completely new skills that may be essential for your current role or for future job opportunities.

- Alignment with Employer Needs: Upskilling must be aligned with company needs and strategic objectives to ensure that employees are contributing to the success of the organization.
2. Reskilling: Reskilling focuses on the process of acquiring completely new skills that allow employees to change careers or roles within an organization. This is especially relevant in a world of work where automation and technology are rapidly changing the nature of jobs (Martínez-González, Selva, & Crespo, 2019). Some key aspects of reskilling include:
    - Career Change: Employees can learn entirely new skills to enter different career fields than those for which they were initially trained.
    - Adaptation to Technological Changes: Reskilling can be essential when automation or technology radically changes job responsibilities.
    - Investing in the Current Workforce: Companies can invest in reskilling their current workforce instead of hiring externally, which can be more cost-effective and beneficial in the long term.

Importance of Upskilling and Reskilling:

Upskilling and reskilling are essential elements in today's world of work to ensure that employees and organizations can thrive in a constantly changing environment (Martínez, Fernández-Rico, Díez, Solabarrieta and Eloy-García, 2021). These strategies not only benefit employees, but also strengthen the competitiveness and adaptability of companies in the market.

- Staying Relevant: Upskilling and reskilling allow employees and organizations to stay relevant in a constantly evolving labor market.
- Increased Productivity: Skilled employees are more productive and can tackle tasks more efficiently.



- Talent Retention: Companies that invest in developing the skills of their employees often see greater talent retention, as employees feel valued and have opportunities for growth.
- Adaptation to Technological Changes: Upskilling and reskilling help organizations adapt to technological changes and embrace new opportunities.
- Career Flexibility: Employees who learn new skills may have greater career flexibility and be more resilient to job interruptions.

Implementation process

1. Upskilling and reskilling strategies are essential for successful workforce adaptation and industry competitiveness in a constantly changing work environment (Bote, 2017). These strategies benefit both organizations and workers by improving employability and adaptability, resulting in greater career growth and business success.
2. Needs Identification: Starts with identifying skills gaps through assessments, performance analysis, and collaboration with industry experts.
3. Program Design: Upskilling and reskilling programs are customized to identified needs and can include a variety of training methods.
4. Implementation: Time and resources are allocated for employees to participate in training programs.
5. Measuring Progress: Monitoring progress and periodic assessments help ensure that the necessary skills are acquired.
6. Impact Evaluation: It is evaluated how the new skills impact the efficiency, quality and competitiveness of the organization.
7. Continuous Adaptation: As technology continues to evolve, a continuous adaptation process is established to keep the skills of the workforce up to date.

Current Context of the Education Industry: The Transformation of Online Education

In the year 2023, the education industry is in the midst of a fundamental transformation. The COVID-19 pandemic has accelerated the adoption of online education and has dramatically changed the way it is taught and learned (Almeida, Duarte, & Monteiro, 2020). As a result, educational institutions, from primary schools to universities, are faced with the challenge of adapting to this new learning paradigm.

Main challenge: adaptation to online education

The “EduDigital” school is a traditional educational institution that strives to remain relevant in this new online education environment (García, Grilló and Morte, 2021). It faces several challenges:

- Transition to online teaching.
- Changes in the study plan.

“EduDigital” is at a critical crossroads as online education has become the norm. Although this educational institution has a strong track record in in-person teaching, it faces substantial challenges as it attempts to stay relevant in this new digital environment. Key challenges facing EduDigital include:

Transition to online teaching

First, the transition from in-person teaching to online education is a transition that affects all aspects of the institution. Most EduDigital teachers and educational staff have spent years honing their skills in the physical classroom, but now find themselves in the position of having to learn how to effectively facilitate online courses. This involves the acquisition of new skills, such as navigating online learning platforms, managing virtual classes, communicating online with students, and adapting your pedagogical methods for the digital environment.

Changes in the study plan

In addition to the transition of online teaching, EduDigital also faces the challenge of adapting its curriculum to the needs and expectations of online students. This not only involves transferring existing content to a digital format, but also creating new learning resources that are engaging and effective online. Teachers must reevaluate how they present information, how they interact with students, and how they design assessments and activities that encourage active participation and self-directed learning online.

Development of Personnel Skills

To address these challenges, EduDigital recognizes the need to invest in the skills development of its teaching and administrative staff. This includes training in educational technologies, online pedagogy, and student engagement strategies in a virtual environment. EduDigital must foster an environment of continuous learning and provide the necessary support for its staff to acquire these new skills and feel comfortable in the online education environment.

The identification of upskilling and reskilling needs in the educational institution is carried out through a process of exhaustive analysis and evaluation. Here are the places and methods where these needs can be identified.

**Knowledge and Competency Assessments:** Assessments can be conducted before and after online training to measure the increase in knowledge and competencies related to online teaching. This could include written tests, practical exercises on online learning platforms, and virtual course design projects.

**Monitoring Performance in the Virtual Classroom:** Teachers who have received training in online education can be evaluated on their performance in the virtual classroom. You can measure the effectiveness of your online course facilitation, interaction with students, and ability to use technological tools efficiently.

- **Student Feedback:** Student feedback is essential. Feedback can be collected from students on the quality of online teaching, accessibility of content, and interaction with teachers. This can help evaluate the effectiveness of upskilling and reskilling strategies.

- **Assessment of Learning Outcomes:** Student learning outcomes can be compared before and after the implementation of online education to determine if there have been significant improvements in understanding and academic performance.
- **Monitoring Student Engagement and Retention:** The success of online training can also be evaluated by student retention and engagement. If students are more engaged and retain information better, it may be an indicator that upskilling and reskilling strategies have had a positive impact.
- **Evaluating the Effectiveness of Online Content:** Usage metrics and engagement with online content can be analyzed to evaluate the effectiveness of new online resources and teaching materials created as part of the adaptation to the digital environment.
- **Technology Adoption Monitoring:** For administrative staff, the effective adoption of educational technologies, the management of online platforms and the ability to resolve technical problems efficiently can be evaluated.

These assessments will provide a comprehensive view of how upskilling and reskilling strategies are impacting EduDigital's transition to online education and whether the goals of improving educational quality and the online student experience are being achieved.

Method

To investigate and evaluate the effectiveness of upskilling and reskilling strategies in the case study of the fictitious school "EduDigital" in its adaptation to online education, a mixed research methodology could be used. This methodology combines quantitative and qualitative approaches to obtain a complete and deep understanding of the situation. Here's a general approach:

Quantitative research

**Surveys:** Surveys were developed for faculty and staff before and after online training to measure changes in perceptions and skills related to online teaching.



- **Performance Data Analysis:** Student performance data, such as grades, retention rates, and online course completion rates, were analyzed before and after the implementation of the training strategies.
- **Learning Platform Usage Metrics:** Data was collected on the use of online learning platforms, including time online, student interaction, and participation in learning activities.

#### Qualitative research

- **In-Depth Interviews:** In-depth interviews were conducted with teachers and administrative staff to obtain qualitative information about their experience in online training, the challenges faced, and perceptions about the effectiveness of upskilling and reskilling strategies.
- **Content Analysis:** The content of the online courses, interactions with students, and student comments were analyzed to evaluate the quality of the content and interaction in the virtual environment.
- **Focus Groups:** Focus groups were held with teachers and administrative staff to discuss in detail their experiences and perceptions about the transition to online education.
- **Document Analysis:** EduDigital internal documents were reviewed, such as training plans, training materials, policies and performance evaluations, to evaluate the implementation of upskilling and reskilling strategies.
- **Comparative Analysis:** Comparison of data and results before and after the implementation of training strategies to evaluate whether there have been improvements in teacher performance, student learning, and the quality of online education.

This mixed methodology will allow a deep understanding of how upskilling and reskilling strategies are impacting EduDigital in its transition to online education, providing both quantitative data and qualitative insights. This will allow for a full evaluation of the effectiveness of these strategies and informed decision making for future improvements.

#### Results

##### *Quantitative results obtained*

##### *Improvement in Teacher Skills*

Before the online training, 65% of teachers reported feeling insecure in facilitating virtual classes. After completing the training, this number decreased to 15%.

##### *Student performance*

Before the implementation of online education, the student retention rate in online courses was 70%. After training and curriculum adaptation, the retention rate increased to 90%.

##### *Student participation*

Prior to online training, 30% of students reported actively participating in online discussions. After training, this number increased to 75%.

##### *Student grades*

Student grade point average in online courses increased by 10% after the implementation of upskilling and reskilling strategies among teaching staff.

##### *Positive Feedback from Students*

85% of students expressed satisfaction with the quality of online teaching after teacher training, compared to 60% before

##### *Implementation*

These results suggest that the upskilling and reskilling strategies implemented in EduDigital had a positive impact on improving teacher skills, student performance, and overall student satisfaction with online education. However, it is important to remember that these results are fictitious and are provided only as an example in a hypothetical context. Actual results may vary depending on the specific circumstances of each institution and training program.

Qualitative results obtained

In-Depth Interviews with Teachers

Teacher Experience in Training: Most teachers expressed that the online training was a challenging but valuable experience. They mentioned that at first they felt overwhelmed by the technology, but after the training, they felt more confident and competent in teaching online.

Adaptation of Pedagogical Methods: Teachers highlighted the need to adapt their pedagogical methods. They noted that they are now more aware of the importance of online interaction and personalizing teaching to meet individual student needs.

Interaction with Students: Teachers mentioned that online interaction allowed them to have closer contact with students. They appreciate the ability to quickly respond to student questions and provide personalized feedback.

Focus Groups with Administrative Personnel

Online Platform Management: Administrative staff noted that the training helped them better understand online learning platforms and manage them effectively. This improved the overall student experience.

Technical Support: Administrative staff highlighted the importance of a strong technical support team. The training allowed them to address technical issues more efficiently and provide assistance to teachers and students when faced with technological challenges.

Online Content Management: Administrative staff highlighted the importance of effective organization and management of online content. The training enabled them to create and maintain a structured and accessible online learning environment.

According to the results of the qualitative research, EduDigital teachers and administrative staff experienced a positive transformation in their roles and skills as a result of the upskilling and reskilling strategies. The training enabled them to adapt to online education, improve the quality of teaching, and provide a more effective and satisfying online learning environment for students.

These fictitious results suggest that investment in skills development had a positive impact on EduDigital's successful transition to online education.

Development of a strategic plan

Successful implementation of these strategies not only improves employee employability and adaptability, but can also lead to sustainable growth and long-term business success.

Design of Custom Programs

- Develop personalized training programs according to identified needs.
- Use a variety of training methods, such as online courses, workshops, mentoring, and hands-on projects.

Access to Learning Resources

- Provide employees with access to online learning resources, course libraries and training platforms.
- Encourage self-directed learning and the exploration of topics relevant to their development.

Mentoring and Learning at Work

- Facilitate mentoring programs where more experienced employees can guide those who are acquiring new skills.
- Promote learning at work through the assignment of challenging projects and collaboration in multidisciplinary teams.

Progress measurement

- Establish clear metrics to measure employee progress in skill development.
- Conduct periodic assessments and follow-ups to evaluate skill acquisition and application on the job.

Incentives and Recognition

- Offer incentives, such as bonuses or promotions, for those employees who demonstrate a strong commitment to upskilling and reskilling.

- Publicly recognize employee achievements and contributions in skill development.

Impact evaluation

- Evaluate how new skills impact the efficiency, quality of work and competitiveness of the company.
- Align skill development with the organization's strategic objectives.

Continuous Adaptation

- Maintain a process of continuous adaptation as skills and technology needs evolve.
- Regularly review and update training and skills development programs.

Learning Culture

- Foster a culture of learning throughout the organization where training and skills development are seen as essential and continuous.
- Promote knowledge exchange and collaboration between employees.

Measurement of Financial Results

- Evaluate the financial impact of investments in upskilling and reskilling in terms of increased productivity, employee retention and competitive advantage.

Conclusions

Upskilling and reskilling are essential processes that benefit both individuals and companies by improving skills, employability and adaptability in a constantly changing world of work. These strategies are key to successfully navigating the challenges and opportunities presented by technological and economic evolution.

Relevance in a Constantly Changing World: In a constantly evolving world of work, upskilling and reskilling are essential for employees and organizations to stay relevant and competitive.

Improving Employability: Individuals who invest in the development of their skills through upskilling and reskilling have more job opportunities and can adapt to changes in market demand.

Talent Retention: Companies that offer skill development opportunities often retain their employees better and create a more motivating work environment.

Adaptation to Technology: Upskilling and reskilling allow organizations to adapt to technological advances and take advantage of the new opportunities they provide.

Investment in the Future: For both individuals and companies, upskilling and reskilling represent an investment in the future, as they improve employability and long-term competitiveness.

Career Flexibility: Reskilling in particular gives employees the flexibility to change careers or take on different roles within an organization.

Learning Culture: Fostering a culture of continuous learning is essential for the success of upskilling and reskilling, both at the individual and organizational levels.

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The well-being of teachers favored by emotions, integral human development and the organizational climate

El bienestar de los docentes favorecido por las emociones, el desarrollo humano integral y el clima organizacional

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Abstract

This research seeks to integrate and structure in order of relevance the main elements of emotional development, integral human development, and the organizational climate that favor the well-being of preschool, primary, and secondary education teachers in the state of Zacatecas. The population was made up of all the basic education teaching staff, a total of 17,695 -sector heads, supervisors, Pedagogical Technical Advisors, managers, deputy principals and group teachers -, the instrument was applied from a Google form and 5,593 were received. answers. Factorial analysis was carried out with the principal component extraction method, obtaining a total of 20 components that explain 60.68% of the phenomenon, taking into account the first 8 factors that yield a level of explanation of 50.31% of teacher well-being. The main results highlight and confirm that teacher well-being is related to: 1. Emotional development in the aspects of: self-efficacy 0.74, emotional knowledge 0.72, emotional awareness 0.69 and positive emotions 0.68; 2. Integral human development in the aspects of: building social well-being 0.77, social responsibility 0.76, suitable habitat 0.76, common decisions 0.75 and physical exercise 0.74; 3. The organizational climate in the aspects of: camaraderie 0.72, school organization 0.68, trust in the director 0.67 and cooperation 0.65.

Teacher well-being, Emotional development, Organizational climate, Integral human development

Resumen

La presente investigación busca Integrar y estructurar en orden de relevancia los principales elementos del desarrollo emocional, desarrollo humano integral, y el clima organizacional que favorecen el bienestar de los docentes de educación preescolar, primaria y secundaria del estado de Zacatecas. La población se conformó con todo el personal docente de educación básica, en total de 17,695 -jefes de sector, supervisores, Asesores Técnico Pedagógico, directivos, subdirectores y docentes de grupo -, el instrumento se aplicó desde un formulario de Google y se recibieron 5,593 respuestas. Se realizó análisis factorial con método de extracción de componentes principales, obteniendo un total de 20 componentes que explican el 60.68% del fenómeno, tomando en cuenta los primeros 8 factores que arrojan un nivel de explicación del 50.31% del bienestar docente. Los principales resultados destacan y confirman que el bienestar docente está relacionado con: 1. El desarrollo emocional en los aspectos: autoeficacia 0.74, saber emocional 0.72, conciencia emocional 0.69 y emociones positivas 0.68; 2. El desarrollo humano integral en los aspectos: construir bienestar social 0.77, responsabilidad social 0.76, hábitat adecuado 0.76, decisiones en común 0.75 y ejercicio físico 0.74; 3. El clima organizacional en los aspectos: compañerismo 0.72, organización escolar 0.68, confianza en el director 0.67 y cooperación 0.65.

Bienestar docente, Desarrollo emocional, Clima organizacional, Desarrollo humano integral

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## Introduction

This research on teacher well-being is the result of an exploration that aims to be original in linking the three aspects that comprise it: integral human development, emotional development and organisational climate. It also seeks to contribute to scientific knowledge on the line of well-being, providing a proposal that explains the interaction between the factors of integral human development, emotional aspects, and those related to the organisational climate in their work space that influence the well-being of pre-school, primary and secondary school teachers. The following are some possible contributions of this study.

Given the objective and subjective world of possibilities in which teachers are immersed, it is of great social relevance to investigate this issue, since the more knowledge there is on the subject, the greater the spread of information, which will provide educators and human beings with tools to think, build habits and regulate processes that promote and strengthen their peace of mind, serenity and well-being. This is confirmed by Schui and Krampen in 2010, who stated that from 2000 to 2008 at the international level, only 5.2% of the research corresponds to well-being (Cited in Millán A, García D & D'Aubeterre M, 2014).

Subjective and objective teacher well-being is a necessity, and therefore becomes a priority. Scientific studies on the subject show this, to mention some aspects such as social support (Jiménez, A; Jara, M & Miranda, E., 2012, p. 126) and self-fulfilment (Hué, C., 2012, p.64), which are components that strengthen teachers in their work. In addition, the higher the level of teacher well-being, the institution benefits, since it increases their ability to have more "self-control, curiosity and love for learning, to love and be loved, gratitude and courage" (García D, 2020). The aim is to contribute to the field of teacher wellbeing, making small contributions that contemplate various aspects that are part of a teacher's life, from the areas of integral human development, emotions and the work space of a teacher.

In the specific case of teacher well-being, the concept is a recent term that began to be used in the first decade of the 21st century. When reviewing databases or indexed journals, one frequently finds research that deals with discomfort and its impact on teachers in different fields and areas of knowledge. However, in recent years this issue has taken an important turn, instead of focusing on discomfort, aspects that strengthen and promote well-being in teachers are now being envisioned, so the focus has undoubtedly changed. Teacher well-being began to be reviewed from a psychological well-being perspective, where instruments were used to measure teachers' psychological well-being, for example, in 2002, Zacarés, Ruíz & Amer described the instrument used to link generativity and teachers' psychological well-being.

In the period from 2000 to 2010, research was published that emphasised teacher well-being and linked it to aspects of psychological well-being, leadership, job satisfaction, socio-emotional, psychosocial, physical and mental health, affective dimensions, emotional intelligence, among others. As Hué, C. (2012) points out, the best way to address teacher well-being is by turning the focus away from focusing on processes of discomfort and identifying those aspects that promote well-being, since everything depends on the interpretation given to the processes that are experienced, through the development of emotional competences.

But the rise of this topic is in the second decade of the 21st century, research around the world provides data on the benefits of considering teacher wellbeing and its positive effects on the educational community of the institutions. Teacher well-being is considered in various aspects: work space, emotional thinking, positive psychology, personality, intelligence, emotional skills and competences, linked to technologies, educational practices, affective factors, neuroscience, resilience, work identity, satisfaction and life project, just to mention the diversity of data on teacher well-being, with the emotional sphere being the most favoured.

International organisations such as the OECD consider teacher well-being to be indispensable, given the stress and burnout experienced in this field. In its latest Teaching and Learning International Study (TALIS, 2018) report, the foundations of what is to come are already shown, given that its conceptual framework on teacher well-being conceptualises teacher well-being from the cognitive, subjective, physical, mental and social aspects (Cited in IB, 2020).

Currently, there are organisations such as the International Baccalaureate (IB) that promote teacher well-being, since, according to this organisation, students are influenced and affected by the discomfort that teachers experience (IB, 2020). Some strategies for self-care, according to Wigford, are: developing a good level of emotional aspects, forming support networks.

### Methodology to be developed

*Objective:* To integrate and structure in order of relevance the main elements of emotional development, organisational climate and integral human development that favour the well-being of pre-school, primary and secondary school teachers in the state of Zacatecas.

*Hypothesis:* The well-being perceived by preschool, primary and secondary school teachers in the state of Zacatecas integrates elements of emotional development, organisational climate and integral human development of the institution where they work.

*Type of research:* quantitative, non-experimental, cross-sectional, prospective, descriptive and integrative. The above is explained from the following premises addressed by the author: By the proposition of the objective it is non-experimental given that there is no manipulation of the before and after with the object of study, this being deductive. Given its orientation, it is cross-sectional, since it analyses a part of the phenomenon. Given the way it is carried out, it is prospective, as it does not take the past/future of the object of study, the main line is oriented towards probability. Due to the expository derivation of the research, it is descriptive, because it shows possibilities of attributes, structures or relationships, based on what has already been investigated.

And, finally, given the methodological implication and derivation, it is integrational, since it integrates variables according to the common variance or factorial analysis method (González H, 1994).

*Profile:* The profile taken into account is based on the following aspects: a) Being a basic education teacher, specifically in preschool, primary and secondary education in the state of Zacatecas, b) Having a position related to education, regional director, sector head, supervisor, ATP, ATR, academic director, deputy director, group teacher, area head, head of programme, physical education, USAER, English, Art, etc., and c) Having a job in the state of Zacatecas, and d) Being working in the state of Zacatecas, and c) Be working in the 2019-2020 school year.

### Universe, population and sample.

Universe: This includes all staff, with the functions mentioned in the previous point, who work for a public or private pre-school, primary and secondary educational institution in the State of Zacatecas. Population: Refers to the 17,695 education workers (with the functions mentioned in the profile) that make up the pre-school, primary and secondary levels in the State of Zacatecas. Sample: For the present research, the total population was 17,695 pre-school, primary and secondary basic education teachers in the state of Zacatecas, of whom 5,593 responded on Google forms. The valid sample according to the formula (table 1) only required a database with 378 surveys, however, the 5,593 responses received were used.

$$\delta = \frac{x^2 NP (1-P)}{d^2 (N-1) + x^2 P (1-P)}$$

Where:

S= Sample size required

N= Size of the population

P= Proportion of the population which by the construction of the table is assumed to be 0.50

d= The degree of precision reflected as the amount of error that can be tolerated in the fluctuation of a proportion of the sample p in relation to the proportion of the population P minus the value for d, being 0.05 in the calculations for entries in the table, an amount equal to  $\pm 1.96$  sp.



$X^2$ = value of chi-square tables for a degree of freedom relative to the desired confidence level, which was 3.841 for the 0.95 confidence level represented by the table entries.

*Design of the instrument:* For the design of the instrument, a documentary analysis of research on the axes: emotional development, organisational climate and integral human development was carried out. Subsequently, the main aspects contemplated in said research were detected, subsequently structuring the main or complex variables, where the concepts are recovered and the points in common of the various authors are unified. Thirdly, the secondary or simple variables that make up the instrument were identified, based on the importance supported by the research reviewed, a semantic definition was taken from one or more authors, and finally an operational definition was constructed based on the author's concept and what was intended to be known about the respondent.

Based on the above, the first instrument was developed with 133 items, then it was applied to 27 people (primary school teachers) as a pilot test, the data were captured in the NCSS program, then the Crombach's Alpha was calculated, obtaining 0.968 validity. This first instrument was adapted and the variables that were found to have problems in the wording were corrected, and the difficulties that the respondents had in answering the questionnaire were also observed. Subsequently, some variables were complemented and added, from 135 to 149. A second pilot test was applied to 26 pre-school, primary and secondary school teachers, given that more simple variables were integrated. A Crombach's Alpha of 0.975 reliability was obtained from this test. After the second pilot test, we proceeded to the final application of the instrument with 151 items corresponding to the operationalisation of the simple variables.

*Variables:* Teacher well-being is considered from different perspectives. After reviewing the various research studies on the subject, it was decided to integrate three areas of research: integral human development, emotional development and organisational climate.

a) Integral human development aims to rescue a different perspective, that is, seeking to integrate aspects that are part of social processes (10 items), economic (10 items), educational (10 items), its relationship with the environment (10 items), physical health (12 items), leisure (10 items), spiritual (10 items) and as a life project (10 items). b) Emotional development is a highly studied aspect. However, there is a SEP (2017) socioemotional education proposal for students, so the areas addressed therein were taken up again, considering that if the teacher is going to teach them, he/she is in possession of these: self-knowledge (7 items), empathy (7 items), self-regulation (7 items), collaboration (7 items) and autonomy (7 items). c) Organisational climate integrates specific aspects of the teaching work context, involving individual psychological characteristics (11 items), group aspects (11 items) and those related to the institution (11 items).

*Measurement and scale:* Each complex variable was developed into simple items or variables, the semantic definition and the operational one, for this the ratio scale was used (0-10 where 0 is absence of the attribute and 10 the maximum value).

*Data collection.* In May 2020, support was requested from the educational authorities of the Ministry of Education of Zacatecas (SEDUZAC) to send the survey to regional directors, sector heads, zone supervisors, administrative and academic directors, ATP and ATR, subdirectors and teachers of preschool, primary and secondary education in Zacatecas. The proposal was authorised and on 3 June, the link to the Google Form, where the final instrument was captured, was shared via Whatsapp groups. In a period of approximately one month, 5,593 responses were received.

## Results

In the search for aspects that make up teacher well-being from the axes of integral human development, emotional development and organisational climate, this section shows the statistical treatments of characterisation and integrational analysis, the latter to identify factors that integrate the various aspects addressed in this research.



The total sample is made up of 5,593 basic education teachers: preschool, primary and secondary in the state of Zacatecas, of whom 61.1% are female and 38.9% are male.

Male	Female	Total
2,175 (38.8%)	3,418 (61.1%)	5,593

**Table 1.** Frequencies and percentages of participants' sex  
*Source: Own creation, (2023)*

Of the total number of respondents, 17.3% work in pre-school education, 49.1% work in primary education, and 33.6% are in secondary education.

Level	Men	Women	Total
Preschool	114 (11.7%)	855 (88.2%)	969 (17.3%)
Primary	1,158 (42.1%)	1,588 (57.8%)	2,746 (49.1%)
Secondary	903 (48.0%)	975 (51.9%)	1,878 (33.6%)
Total	2,175	3418	5,593

**Table 2** Educational level of participants  
*Source: Own creation, (2023)*

The factor analysis was carried out in the IBM SPSS Statistics programme using the principal component extraction method. For the presentation format of the coefficients, the following was requested: to sort by size, to suppress small coefficients and to return only those with an absolute value greater than .5, seeking to obtain components with high factor loadings. The anti-image test was also requested, where no variable with values lower than .8 was identified.

The KMO and Bartlet table shows that it is relevant to perform the factor analysis and it is assumed that the data come from a normal distribution.

Kaiser-Meyer-Olkin measure of sampling adequacy			0.987
Bartlett's test of sphericity	Approx.	Chi-square	562958.473
	gl		11325
	Sig.		0.000

**Table 3** KMO and Bartlett's test  
*Source: IBM SPSS Statistics (2023)*

In the total variance explained, according to the autoinitial values, the accumulated percentage shows a total of 20 factors or components that explain 60.68% of teacher well-being. The first 8 factors have a higher percentage of explanation of the research phenomenon, accumulating 50.31% of the total obtained by the 20 components.

Component	Initial eigenvalues			Sums of squared extraction charges		
	Total	% de variance	% accumulated	Total	% de variance	% accumulated
1	50.25	33.28	33.28	50.25	33.28	33.28
2	6.20	4.11	37.39	6.20	4.11	37.39
3	4.95	3.27	40.67	4.95	3.27	40.67
4	4.10	2.71	43.38	4.10	2.71	43.38
5	3.11	2.06	45.44	3.11	2.06	45.44
6	2.73	1.80	47.25	2.73	1.80	47.25
7	2.56	1.70	48.95	2.56	1.70	48.95
8	2.05	1.36	50.31	2.05	1.36	50.31
9	1.83	1.21	51.53	1.83	1.21	51.53
10	1.67	1.11	52.64	1.67	1.11	52.64
11	1.52	1.01	53.65	1.52	1.01	53.65
12	1.37	0.90	54.56	1.37	0.90	54.56
13	1.35	0.89	55.46	1.35	0.89	55.46
14	1.24	0.82	56.28	1.24	0.82	56.28
15	1.21	0.80	57.08	1.21	0.80	57.08
16	1.16	0.77	57.86	1.16	0.77	57.86
17	1.14	0.75	58.61	1.14	0.75	58.61
18	1.08	0.71	59.33	1.08	0.71	59.33
19	1.02	0.68	60.01	1.02	0.68	60.01
20	1.01	0.66	60.68	1.01	0.66	60.68

**Table 4** Total variance explained  
*Source: IBM SPSS Statistics (2023).*

The component matrix shows the results that integrate the 20 factors. However, the rotated components matrix reorganises the factors with different variables and with loadings higher than .5, as requested in the method, so it is from this matrix that we will work to show the results obtained in the factor analysis.

For the construction of the "emotional development" axis, 5 complex variables with 7 items each were considered. Factor 1 shows interactions between the variables of emotional development, leaving aside the structure established in the first construct, and organising the variables according to the factor loadings, as follows:

Self-efficacy 0.74, Emotional knowledge 0.72, Neutral emotions 0.71, Emotional awareness 0.69, Positive emotions 0.68, Emotional self-knowledge 0.67, Courage 0.67, Personality 0.67, Optimism 0.67, Acceptance 0.66, Positive attitude 0.65, Emotional autonomy 0.65, Identifies potential 0.65, Congruence 0.65, Social intelligence 0. 63, Internal logic 0.63, Authenticity 0.63, Open-mindedness 0.62, Self-esteem 0.62, Self-concept 0.61, Self-motivation 0.58, Social skills 0.57, Perspective 0.55, Appreciation of excellence 0.54, Modesty 0.54, Social competence 0.53, Life satisfaction 0.53, Empathic understanding 0.52, Respect 0.50 and Persistence 0.50.

Of the total of 35 items that made up the "emotional development" axis, 30 were correlated and 5 variables were excluded, grouping them in order of importance and structuring a new perspective of the aspects that favour the well-being of pre-school, primary and secondary school teachers.

The "organisational climate" axis included three complex variables with 11 items each. Factors 2 and 7 group together variables from the "organisational climate" axis, correlating the variables with the highest factor loadings and showing that there is interaction between the three complex variables. Therefore, it can also be affirmed that the "organisational climate" has outstanding aspects that favour the well-being of pre-school, primary and secondary school teachers.

In factor 2, the aspects that stand out are as follows: School organisation 0.68, Cooperation 0.65, Participation 0.64, Internal environment 0.61, Organisational commitment 0.60, Functioning or respect for diverse roles 0.53, Always seeking the best solution to conflicts 0.50 and Dimensions of school diversity 0.503. For factor 7, which also corresponds to the axis "organisational climate" there is only correlation between two complex variables and is made up of the following aspects: Relationships 0.74, Companionship 0.72, Trust in the principal 0.67, Teamwork 0.63 and Motivation 0.56.

Of the total of 33 items that made up the "organisational climate" axis, only 13 were considered important in the factor analysis and 20 variables were excluded, thus constructing a new approach to the well-being of primary and secondary school teachers.

Factors 3, 4, 5, 6, and 8 are part of the "integral human development" axis. In the case of this axis, there is no correlation between the 8 complex variables. In addition, 3 complex variables are excluded in the factor analysis. Factors 3, 4, 5, and 8 group together a different complex variable with no communalities between them. However, it is affirmed that integral human development does favour the well-being of primary and secondary pre-school teachers. This is the result:

Factor 3, Human development of the environment: Social responsibility 0.76, Adequate habitat 0.76, Care for water 0.70, Reflect on their relationship with nature 0.69, Carry out their lives without harming the environment 0.69, Energy care 0.64, Garbage collection 0.63, Care for other living beings 0.60, Environmental information 0.54 and Recycle 0.54.

Factor 4, physical health human development: Physical exercise 0.74, Taking care of physical health 0.71, Nourishes adequately 0.70, Body posture is adequate 0.67, Body motor skills 0.63, Body care 0.63, Breathes adequately 0.62, Drinks adequately 0.61

Factor 5, educational human development: Integrates diverse knowledge about education 0.60, Right to education 0.57, Participates in making education accessible 0.56, Considers it essential to be learning 0.55, Manages own knowledge 0.55, Respects the diverse cultures with which he/she lives 0.51, Promotes education in life skills 0.51.

Factor 6, social human development: Participates to build social welfare 0.77, Participates in social causes 0.76, Makes decisions in common 0.75, Promotes citizen security 0.71, Promotes the integral development of individuals 0.59

Factor 8: Spiritual human development: Development of the soul 0.60, Work to improve in virtue 0.58, Participate in activities that develop your spirit 0.57, Generate harmony in your life 0.52, Work to always be yourself 0.50.

Of the total of 103 items on integral human development, only 35 were regrouped and 68 variables were left out, generating 5 separate factors: environment, physical health, education, social aspects and spirituality. Two findings emerge from this axis: 1) The aspect of integral human development does favour teacher well-being, since out of a total of 8 initial complex groupings/variables, 5 were considered important, and 2) The axes do not correlate with each other. In other words, they partly confirm the design of the first construct on these aspects. Within the 8 factors with the highest level of explanation of teacher well-being, it is stated that each component integrates variables that correspond to the same axis or theme.

It can be observed that there was no correlation or grouping between the three research axes and the variables of these axes.

## Discussion

If we analyse the results discovered from the vision of Sánchez, Fernández and Carcedo (2017), they state that the well-being of each individual is the mental and emotional assessment, which is constantly made on the feeling of satisfaction in relation to achievements and failures, in every aspect of life. It can be considered that it goes beyond an assessment of achievements and failures, but it does integrate various aspects of life, since it recovers characteristics that are correlated with integral human development, emotional development and organisational climate.

One of the most important components is emotional development, according to Mérida S, Extremera N, Quintana C & Rey L, (2020) report that teachers who have developed skills to "perceive, understand and regulate their emotional states and those of their students develop more resilient strategies to cope with setbacks and adversities that may arise in the educational context, using creative, optimistic and personal development ways to deal with them" (p.72). Likewise, the PERMA Model (Positive emotions, commitment, relationships, purpose and achievement) or Seligman's theory of well-being, (2018) which states that it is essential to know the strengths and weaknesses of the human being, choosing their positive emotions, commitments, relationships, purposes and achievements to self-build their well-being. In this work, elements such as positive emotions (.68), responsibility or commitment (.76), companionship or relationships (.72) are confirmed. According to Hué (2014), the emotional competences that a teacher possesses are decisive in the self-construction of well-being. Coinciding with this, the results of the factor analysis provide a large number of variables that confirm that the main aspect of teacher well-being is emotional. Dávila J, (2018) considers that teacher well-being is expressed in the personal, and in turn its development is associated with various individual, contextual, organisational and socio-cultural variables, influencing from the outside so that it is perceived and visible through a pleasant, positive manifestation of commitment and satisfaction.

If the organisational climate of an educational institution is good, the influence on teachers will have a positive impact (Márquez T, 2020), which was also confirmed in this study. The teachers surveyed in the research stated that they participate in refresher courses to improve their daily teaching and learning process. The above can be stated from the interactionist model of well-being (Muñoz, E, 2018), which links the internal with the external of the individual, (the institution being the external space) where, if one has a positive perception of the workplace, this can motivate him/her to improve and train. Within an institution, for Moreno, et al. (2016) the organisational climate maintains an immediate link between managers, teaching staff, administrative staff and the community of the institution in general, so this climate reflects the interaction and coexistence of the actors. The results obtained in this research provide similarities, and in turn confirm that the individual, group and institutional aspects allow them to build and maintain well-being in the institution where they work. This is complemented by the statement of Montoya P, et al. (2017) that the greater the teacher satisfaction in the aspect of school organisation, the greater the perception of a pleasant organisational climate.

In relation to teacher well-being and a perspective from the integral human development, no authors or research were identified that allow us to affirm, compare or deny the importance of this and the aspects that make it up. However, it is essential to approach teacher well-being from an integral perspective of the human being, as stated by Sánchez, A., (2015), envisioning each individual in constant development, in a society where the diverse capacities of the subjects are promoted, creating contexts that allow the balance of possibilities and options to strengthen self-care from all possible areas.

The results of integral human development show that teachers particularly consider some of the most important components for the construction of their well-being as the 8 elements that emerged from the theoretical contributions in the research. After performing the factor analysis, the following 5 were relevant:

- 1) Human development of the environment: social responsibility, adequate habitat, care for water and live with care for the environment.
- 2) Human development of physical health: taking care of their physical health, nourishing themselves adequately and breathing correctly.
- 3) Educational human development: manage their own knowledge, respect diverse cultures and promote life skills education.
- 4) Social human development: builds social well-being, makes decisions in common, promotes citizen security, promotes the integral development of individuals.
- 5) Spiritual human development: enhance virtue, participate in spiritual development, generate harmony in your life and seek to be authentic or be yourself.

This allows us to affirm that the teachers' approach to well-being is centred on a perspective of sustainable human development, based on the generation of environments in a collaborative manner, which allow for healthy and balanced relationships in the interaction with themselves, in their role with society and nature (Mulsow, G., 2008).

## Conclusions

At the beginning of this research, the following question was posed: What elements favor the well-being of preschool, elementary and high school teachers in the State of Zacatecas? To answer this question, we proceeded to review the various databases with research that provided empirical information on the subject. Two areas were identified: emotional development and organizational climate; however, some other researches pointed out some elements and these were integrated into a new axis, which was called integral human development.

Also, the following objective was proposed: "To integrate and structure in order of importance the main elements of integral human development, emotional development and organizational climate that favor the well-being of preschool, elementary and high school teachers in the state of Zacatecas".

When performing the statistical treatment of factorial analysis, it was confirmed that there is an integration of simple variables of integral human development, emotional development and organizational climate, so it is considered that the objective was achieved. However, the three axes: integral human development, emotional development and organizational climate were not correlated among them. However, the main elements of each axis were integrated and structured in order of importance.

In the case of this research, the hypothesis was stated as follows: "The well-being perceived by preschool, elementary and secondary school teachers in the state of Zacatecas integrates elements of integral human development, emotional development and organizational climate". This hypothesis is accepted, since the integrational analysis confirmed that within the 20 factors obtained, variables of the three axes that make up the research are incorporated, so that to achieve greater teacher well-being, it is necessary to incorporate elements of the three axes.

Among the main findings of the present research, the following are made known:

In emotional development, characteristics were identified that contribute to teachers' well-being, including self-efficacy, emotional knowledge, neutral emotions, emotional awareness, positive emotions, emotional self-knowledge, courage, personality, optimism, acceptance, positive attitude, emotional autonomy, identifying one's potential, being congruent, social intelligence, internal logic, authenticity, open-mindedness, self-esteem, self-concept, self-motivation, social skills, perspective, appreciation of excellence, modesty, social aptitude, life satisfaction, empathetic understanding, respect and persistence. The above shows that one of the main elements that favor well-being in teachers is the emotional aspect.

Another indispensable aspect to promote and generate teacher well-being is the organizational climate. Individual, group and institutional elements such as the following: school organization, cooperation, participation, internal environment, organizational commitment, functioning/respect for the various roles, always seeking the best solution to conflicts and dimensions of school diversity, relationships, companionship, trust in the principal, teamwork and motivation. This makes it possible to understand that within an institution it is also possible to enhance the well-being of teachers.

According to the results of integral human development, it was found that teachers consider important for their well-being: the relationship with the environment, indispensable aspects of education, essential characteristics of physical health, crucial social relationships, and finally everything that leads to spiritual self-realization. Thus, the vision of teacher well-being is within the framework of sustainable human development through collaborative environments, healthy relationships with oneself, with others, with nature and with society.

It is clear that aspects of integral human development, emotional development and organizational climate are integrated when identifying aspects of well-being in preschool, primary and secondary school teachers. The above allows us to glimpse a different and integrating perspective on teacher wellbeing, from a broader perspective, with multiple components and also recovering the uniqueness and diversity that each educator possesses.

In the Mexican nation, it is essential to address teacher wellbeing in different areas, since there are still no norms or agreements that promote and strengthen this aspect. It is considered essential to investigate in diverse contexts and realities on the subject, in order to provide greater solidity and thus structure and characterize with greater precision the aspects and variables that make up teacher wellbeing. It is necessary to generate laws, agreements and norms that address this aspect, from basic education to higher education.

The main results highlight and confirm that teacher wellbeing is related to: 1. emotional development in the aspects of: self-efficacy 0.74, emotional knowledge 0.72, emotional awareness 0.69 and positive emotions 0.68; 2. integral human development in the aspects of: building social wellbeing 0. Organizational climate in the aspects of: companionship 0.72, school organization 0.68, trust in the director 0.67 and cooperation 0.65.

It is recommended to develop and implement a teacher training program that considers and integrates the elements found as the main drivers of teacher welfare, to improve the working conditions of education professionals, hoping that these improvements are reflected in the school environment in all its academic indicators, favoring students.

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**Body mass index and agreement with self-perception of body image in adolescents from Mochitlán, Guerrero****Índice de masa corporal y concordancia con la autopercepción de imagen corporal en adolescentes de Mochitlán, Guerrero**

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**Abstract**

Body image is a construction of different components: perceptual, cognitive, affective and behavioral of each individual. The aim to analyze the agreement between BMI and self-perception of body image in adolescents from Mochitlán, Gro. To analyze the agreement between body mass index (BMI) and self-perception of body image, an analytical cross-sectional study was carried out, anthropometry was determined and a survey estimated habits and body self-perception with Stunkard's pictogram (1983). 109 adolescents participated, the majority were women (72.5%), the BMI determined that 10% were overweight, 22.9% obese and 43.5% abdominal obesity. 64.2% presented an inadequate perception of their body image, 2.8% correctly perceived themselves as underweight, 3.7% as overweight and 0.9% as obese. 60% of women perceive themselves as overweight and 78.9% as obese. The comparison of body image and evaluation of nutritional status based on BMI shows that 23.9% perceive themselves as underweight, overweight (22%) and obese (2.8%). Underweight adolescents overestimate their body image, unlike those who are overweight and obese, who underestimate it. When stratifying by sex, female adolescents underestimate and overestimate their body image.

**Resumen**

La imagen corporal es una construcción de diferentes componentes: perceptual, cognitivo, afectivo y conductual de cada individuo. Objetivo: analizar la concordancia entre el IMC y la autopercepción de la imagen corporal en adolescentes de Mochitlán, Gro. Para analizar la concordancia entre el índice de masa corporal (IMC) y autopercepción de la imagen corporal, se realizó un estudio transversal analítico, se determinó la antropométrica y una encuesta estimó hábitos y autopercepción corporal con pictograma de Stunkard (1983). Participaron 109 adolescentes, la mayoría fueron mujeres (72.5%), el IMC determinó que un 10% tenía sobrepeso, 22.9% obesidad y 43.5% obesidad abdominal. El 64.2% presentaron una inadecuada percepción de su imagen corporal, 2.8% se percibe correctamente con bajo peso, 3.7% con sobrepeso y 0.9% con obesidad. El 60% de las mujeres se percibe con sobrepeso y 78.9% con obesidad. La comparación de la imagen corporal y evaluación del estado nutricio a partir del IMC, muestra que un 23.9% se percibe con bajo peso, sobrepeso (22%) y obesidad (2.8%). Los adolescentes con bajo peso sobreestiman su imagen corporal a diferencia de los que presentan sobrepeso y obesidad quienes la subestiman, al estratificar por sexo, las femeninas subestiman y sobreestiman su imagen corporal.

**Self-perception, BMI, Adolescents****Autopercepción, IMC, adolescentes**

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## Introduction

The WHO defines adolescence as a transitional period that develops after childhood and before adulthood (between 10 and 19 years), characterised by an accelerated rate of growth and change, conditioned by various biological and personality processes, building important aspects such as self-esteem, self-concept and identity, fundamental attributes for the personality of the individual (WHO, 2023; Cangas et al., 2019; Morán-Astorga et al., 2019). During this period, family, socioeconomic, biological, psychological, political and media factors can negatively influence the physical and mental health of adolescents (Sanchez and Gómez, 2020; Jaimes et al., 2019). About half of mental disorders begin at this stage of growth, promoting a beauty model of thinness in females and a muscular body in males (Cofré, 2022; Pacheco-Cruz et al., 2020; WHO 2017; Zaccagni et al., 2014; Harter, 2011).

The physical and mental changes of adolescents are also related to their nutritional status, considering the food and nutrition of each one, so that a deficient diet brings with it problems of malnutrition due to deficit (underweight) or excess (overweight or obesity), increasing the risk of non-communicable diseases such as diabetes, cancer, cardiovascular disease and even death (WHO, 2023; Ruiton, 2022). Currently, the epidemiological picture of chronic non-communicable diseases in Mexico is serious, according to the ENSANUT (2018) the combined prevalence of overweight and obesity in young people aged 12-19 years was 38.4% (Ramirez and Luna, 2019).

Body image (BI) is the mental and conscious representation that each individual constructs and perceives of their body (Rodríguez, 2015). Raich defines it as "a complex construct that includes both the perception we have of the whole body and each of its parts, as well as its movement and limits, the subjective experience of attitudes, thoughts, feelings and evaluations". This is influenced by multiple elements such as perceptual, cognitive, behavioural, emotional and cultural, however, it is more relevant during childhood and adolescence, because physical, psychological and social changes generate internal and external conflicts in adolescents (Suárez-Carmona et al., 2018; Guadarrama-Guadarrama et al., 2018).

The CI in adolescence is worrying and the lack of body acceptance can favour the development of body dissatisfaction in both sexes, triggering eating disorders, low mood and psychological alterations such as low self-esteem, depression, anxiety and suicidal ideation, something that is very common in society worldwide and Mexico is no exception. Therefore, the aim of this study was to analyse the concordance between BMI and self-perceived body image in adolescents in Mochitlán, Gro

## Background

## Methodology

Observational cross-sectional study. 109 secondary school adolescents between 12 and 16 years of age from Mochitlán, Guerrero, participated in 2022.

By means of an informed consent form, the parents or guardians of the students were asked for their permission to participate in the study, which they signed when they agreed to participate.

A survey was administered to the students, which was organised in three sections, the first one providing general data, the second one: body image perception (BIP) and the last one addressed daily habits. It took approximately 15 to 20 minutes to complete.

Anthropometric measurements of weight, height, waist circumference (WC) and hip circumference (WCa) were taken, BMI was calculated and the adolescents' nutrition was assessed according to the World Health Organization (WHO) manual of anthropometric measurements, in order to compare the results obtained in the survey with the participants' actual measurements. A Tanita BC-549 precision scale with a capacity of 150 kg was used to determine weight; the measurement technique used was the use of light clothing, barefoot, upright with the forehead raised and arms close to the thighs and feet together; the Seca model BC214 portable stadiometer with a measurement range of 0 to 210 cm was used for height. CCI and CCA were measured with a seca 201 tape measure.



To assess ICP, The body silhouette method designed and validated by Stunkard, Sorensen and Schulsinger (1983) was used, in which nine body silhouette figures are shown, ranging from underweight to obese; participants were asked to choose one of the nine silhouettes in which they perceived themselves best and were classified as: 1-2, underweight; 3-5, normal; 6-7, overweight and 8-9 obese.

Body image distortion was obtained by comparing the silhouette selected by each adolescent with the actual nutritional status obtained by BMI. The results were classified as underestimation (perceived as having a lower nutritional status than the real one), correct estimation (perceived as equal to the nutritional status) and overestimation (perceived as having a higher nutritional status).

Statistical analysis was performed in the statistical programme STATA v 16.0. Qualitative variables were expressed as frequencies and percentages, quantitative variables as means and standard deviation, or medians and interquartile range. For the analysis of anthropometric measurements, the Student's t-test was used for the comparison of means and the Mann Whitney test for the comparison of medians, Pearson's X2 test for the relationship between qualitative variables, a value of  $p<0.05$  was considered statistically significant.

Results

109 adolescents from a secondary school participated, 72.5% (79/109) were female, the age range was 12-16 years with an average of  $13.6 \pm 0.98$ .

When comparing anthropometric characteristics by sex, most of the results were higher in males, only systolic blood pressure (SBP) presented high values in females. However, median weight (57.5 kg) and height (161.9 cm) were statistically significant (Table 1).

Author	Population	Results
Inzunza, 2023	Cross-sectional descriptive comparative study, 150 university students with a mean age of $22.04 \pm 0.56$ years from the Universidad Adventista de Chile in the city of Chillan, Chile.	In terms of body shape perception, 6.1% of the men and 7.7% of the women perceived themselves as underweight and 53.1% and 53.8% as overweight, respectively; however, it was the men (20.4%) who perceived themselves as more obese than the women (13.4%). According to body dissatisfaction, 79% of the men did not have body dissatisfaction, in contrast to 42.3% of the women who were satisfied with their physical appearance.
Castillo Pretell, 2022		63% had an overestimated self-perception of their body image (higher in males: 71.4%) and 24.4% had an underestimated self-perception (higher in females: 26.3%); only 12.6% had an adequate perception according to BMI. It was established that self-perception of body image is sex-dependent ( $p<0.005$ ).
Huapaya & Vargas, 2022	Cross-sectional study, 310 adolescents between 15 and 18 years of age studying in a state school in Trujillo.	61.1% had overestimation of their body image. The anthropometric nutritional status showed 19.5% overweight and 2.8% obesity. The 1st year adolescents overestimated it (83.3%), as opposed to the 5th year adolescents who underestimated it (50%). Adolescents with severe thinness presented a higher percentage of overestimation as opposed to those with obesity who underestimated it.
Jiménez, et al., 2022	Cross-sectional, analytical study in adolescents from 12 to 17 years old, from 1st to 5th year of high school of the parochial educational school Monsignor Marcos Libardoni.	According to BMI, 19.6% were underweight, 9.9% overweight and 9.9% obese. According to body image, 87.7% were dissatisfied (more men, 46.9%). The Chi-square test did not establish a statistically significant relationship between BMI and body image distortion; however, men presented a greater predisposition to have a negative body image.

<b>García, et al., 2020</b>	Quantitative cross-sectional study, 349 students from 12 to 16 years of age from the Licenciado Querido high school. A. Moheno of the municipality of Ixtacomitán Chiapas.	Body image distortion was 63.2%. 52.3% underestimated their perception (50.6% were overweight and obese). Body image distortion was higher in overweight and obese adolescents, and most underestimated their nutritional status. Overweight and obese adolescents have 20.4 times the risk of presenting body image distortion, and age is an adverse effect, as younger adolescents are more likely to have distortion.
<b>Pacheco-Cruz, et al., 2020</b>	Cross-sectional study, 197 adolescents aged 12 to 18 years from a private school in the State of Mexico in 2018.	Twenty-nine point three percent of the adolescents had an erroneous perception of their body image with respect to their BMI, 3.7% overestimated and 25.6% underestimated their body image. Greater distortion was noted on the part of females. On the other hand, 2.4% of overweight adolescents correctly identified their silhouette, while 6.1% with obesity underestimated their BMI. By sex, 29.9% of females and 36.6% of males identified themselves with silhouettes adjusted to their BMI. 6.7% of men and 3.7% of women overestimated their BMI, while in the overweight category 1.2% of the male sex, 6.7% of the female sex underestimated their BMI.
<b>Maryelin, 2019</b>	Observational, descriptive, cross-sectional, descriptive study, 164 bilingual (Zapotec and Spanish) adolescents aged 12 to 17 years from the rural and indigenous community Coatecas Altas, Oaxaca.	The majority presented normal weight (87.4%), 7.7% overweight and 1.4% obese. It was observed that the perceived silhouette correlated positively and significantly with BMI in most adolescents and in both sexes.

<b>Aparicio, et al., 2018</b>	Descriptive, correlational, field and cross-sectional study; 143 incoming adolescents of Bioanalysis and Dentistry majors at the University of Carabobo, Venezuela (2016-2018).	The perception of body image was compared with the evaluation of BMI, 33.1% of the study population presented inadequate perception of body image, 77.8% of the students were underweight, 79.6% overweight and 88.9% obese, had a poor perception of their body image, with low concordance figures with their real body image.
<b>Oliva-Peña, et al., 2016</b>	Observational, cross-sectional, cross-sectional study, 169 high school students between 11 and 16 years old, from a rural community of Huitzilac, Morelos, Mexico.	Concordance between actual and perceived BMI was recorded in 56% of the cases. 79.8% of the young people perceived themselves to be normal weight. However, there was a tendency to overestimate and underestimate body weight. The analysis by sex showed a concordance of 41.6% in women, who tended to underestimate underweight and obesity, while men underestimated obesity to a lesser extent, so they were perceived in a higher percentage in normal body condition and, in underweight condition, slightly more than women.

Table 1 Background

The comparison of ICP with the nutritional status obtained with BMI showed that 23.9% of the adolescents were underweight, 22% were overweight and 2.8% obese. However, only 35.8% have an adequate body perception (Table 2).

Variables	Total n=109 (100%)	Femele n=79 (72.5%)	Male n=30 (27.5%)	p
Age, years	13.61±0.98	13.6±0.97	13.6 ±1.0	0.75 <sup>a</sup>
Weight, kg	52.6 (45.8-62.7)	51.7 (45-59.1)	57.5 (51-74.3)	<b>0.006*</b>
Height, cm	155.6 (151.4-160.6)	154.5 (150.6-157.4)	161.9 (157-165.5)	<b>&lt;0.001*</b>
TAS, mmHg	114 (106-124)	113 (106-120)	119.5 (108-130)	0.06 <sup>b</sup>
DBT, mmHg	67.3 ± 8.2	67.5±7.8	66.6 ± 9.4	0.62
CCi, cm	73.9 (66.2-82.3)	71.9 (66.4-80.05)	77.6 (65-91)	0.15
CCa, cm	87.7 ± 9.5	87.3±9.2	88.6±10.2	0.50
BMI, kg/m²	21.9 (19.3-24.7)	21.6 (19.5-24.2)	22.3 (19.3-27)	0.36
CHF	0.85 (0.81-0.90)	0.84 (0.81-0.89)	0.88 (0.80-0.94)	0.05
CTI	0.47 (0.43-0.52)	0.47 (0.43-0.52)	0.48 (0.41-0.58)	0.85
Data presented as mean ± standard deviation; median (p25-p75). SST: systolic blood pressure. DBT: diastolic blood pressure. BMI: body mass index. BMI: waist-to-hip ratio. WHI: waist-to-height ratio. For the comparison of parametric variables between two groups, Student's t test was used, and in the case of nonparametric variables, the Mann-Whitney U test was used. *Statistical significance: p < 0.05.				

Table 2 Anthropometric characteristics stratified by sex of adolescents in Mochitlán, Gro.

41.3% of the adolescents had an underestimated and 22.9% an overestimated self-perception of their body image. When stratified by sex, underestimation was higher in both sexes, however, overestimation of BMI was higher in females (88%) compared to males (12%) (Table 3).

	Underweight	Normal weight	Overweight	Obese
	n (%)	n (%)	n (%)	n (%)
Actual BMI	12 (11)	61 (56)	11 (11)	25
Self-perception	26 (23.9)	56 (51.3)	24 (22.0)	(22.9)
Adequate	3 (2.8)	31 (28.4)	4 (3.7)	1 (0.9)
Inadequate	23 (21.1)	25 (22.9)	20 (18.3)	2 (1.8)

Table 3 Perception of body image compared to actual body mass index

Adolescents with obesity have an underestimated BMI (53.3%), followed by those with normal weight (31.1%) and overweight (15.6%). While those with normal nutritional status had a higher overestimated perception (64%), followed by underweight adolescents (36%), with a value of  $X^2= 63.41$ ;  $p<0.001$ , (Table 4).

Sex	Self-perception of body image			
	n (%)	n (%)	n (%)	n (%)
	Underestimated	Adequate	Overestimated	Total
Female	30 (66.7)	27 (69.2)	22 (88)	79
				(72.2)
Male	15 (33.3)	12 (30.8)	3 (12)	30
				(27.8)
Total	45 (41.3)	39 (35.8)	25 (22.9)	109
				(100)

Table 4 Concordance between self-perceived body image and body mass index stratified by sex of adolescents in Mochitlán, Gro.

Discussion

The WHO provides BMI as the most useful measure to assess overweight and obesity; the Center for Disease Control and Prevention (CDC) a way to detect weight categories that may lead to health problems. The CI is a construction of different components: perceptual, cognitive, affective and behavioural of each individual, however, it is more relevant during childhood and adolescence, because physical, psychological and social changes generate internal and external conflicts in adolescents, so this is considered the most delicate period for the onset of body dissatisfaction.

A total of 109 adolescents participated, 72.5% were female, the age range was 12 to 16 years and the mean age was  $13.61 \pm 0.98$ .

BMI	Self-perception of body image				p
	n (%)	n (%)	n (%)	n (%)	
	Underestimated	Adequate	Overestimated	Total	
Underweight	0 (0)	3 (7.7)	9 (36)	12	<0.001*
				(11)	
Normal weight	14 (31.1)	31 (79.5)	16 (64)	61	
				(56)	
Overweight	7 (15.6)	4 (10.3)	0 (0)	11	
				(10.1)	
Obese	24 (53.3)	1 (2.6)	0 (0)	25	
				(22.9)	
Total	45 (41.3)	39 (35.8)	25 (22.9)	109	
				(100)	

Table 5 Nutritional status and self-perceived body image of adolescents in Mochitlán, Gro.

With anthropometry, the prevalence of overweight and obesity according to BMI was found to be 22% and 2.8% respectively, compared to Cardona-Gómez, 2019, who reported a prevalence of overweight of 17.6% and obesity of 4.3%, with no statistically significant differences. On the other hand, the highest percentage of overweight (90.9%) and obesity (56%) was observed in the female sex, unlike Romero-Velarde et al., 2018, who obtained a higher proportion in men (56.9%), so it is likely that the low frequency of these alterations found in this research is due to the low number of male students.

When comparing the ICP and the assessment of nutritional status obtained from BMI, it was found that 23.9% of adolescents are observed/perceived as underweight, 22% as overweight and 2.8% as obese, compared to Oliva-Peña et al., 2016, who conducted a study in adolescents in a suburban town in Yucatan, aged 10 to 17 years, reporting that 79.1% are perceived as Normopeso, 13.1% as obese and 7.1% as underweight. On the other hand, Sámano et al., 2015, found 42.5% overweight, 38.1% normopeso and 15.8% obese according to the PIC of a sample of 431 Mexican adolescents, this may be due to the fact that, at present, society tends to idealise a thin image, which leads adolescents to perceive themselves in a way that is superior to what is real.

64.2% of students have an inadequate perception of their body image, compared to Aparicio et al., 2018 who reported lower figures (33.1%), from a population of 169 secondary school students aged 11-16 years, from a rural community in Huitzilac, Morelos, Mexico.

41.3% of the adolescents had an overestimated self-perception of their body image and 22.9% underestimated their BIP, presenting a difference with the findings of Huapaya and Vargas, 2022 who reported that a large proportion of the students obtained a higher overestimation of their BMI (61.1%); on the other hand, Pacheco-Cruz et al, 2020 reported that 4.3% underestimated their BMI and 29.2% overestimated it, whereby, Méndez 2020 mentions that adolescents have a distortion in the way they view their body, as they are more prone to feel dissatisfied, this main problem lies in the social environment in which the adolescent develops (Fernández et al., 2019).

The underestimation was higher in both sexes, however, the overestimation of the CI was higher in females (88%) compared to males (12%); females tend to overestimate mostly the overweight in their body image, and males in smaller proportion the overweight and obesity, coinciding with, Castillo Pretell, 2022 who found that 63% of adolescents in the I. E. Estatal de Trujillo had an overestimated self-perception of their body image and 24.4% with an underestimated image, while differing with Oliva-Peña et al, 2016, who found that 29.2% of women presented overestimation and 18.4% underestimation; in men overestimation was 17.7% and underestimation 17.5%. The variations in results may be due to the fact that males tend to be more concerned with having a muscular body image, while females tend to have beauty ideals that are inseparable from thinness (Ramos et al., 2019).

Adolescents with obesity have an underestimated ICP (53.3%), followed by those who are Normopeso (31.1%) and overweight (15.6%). While those with normal nutritional status had a higher overestimated perception (64%), followed by underweight adolescents (36%), in comparison with Castillo-Pretell, 2022, who mentions that adolescents (regardless of gender) with normal nutritional status had a higher overestimated perception (78.2%), followed by overweight adolescents (50%). Meanwhile, those with obesity (75%) indicated an underestimated perception.

In turn, Pacheco-Cruz, et al., 2020 reported that 2.4% of overweight adolescents correctly identified their silhouette, while 6.1% of obese adolescents underestimated their BMI. 6.7% of males and 3.7% of females who were underweight overestimated their BMI, while 1.2% of overweight males and 6.7% of overweight females underestimated their BMI. Thus, age, gender and body composition are predisposing factors for body image disturbance in adolescence.

## Conclusion

Underweight adolescents overestimate their body image in contrast to overweight and obese adolescents who underestimate their body image. When stratified by sex, females underestimate and overestimate their body image.

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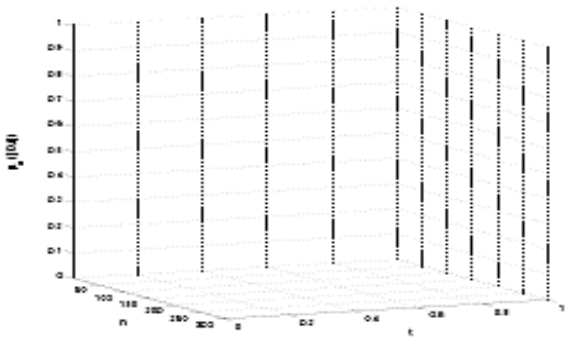
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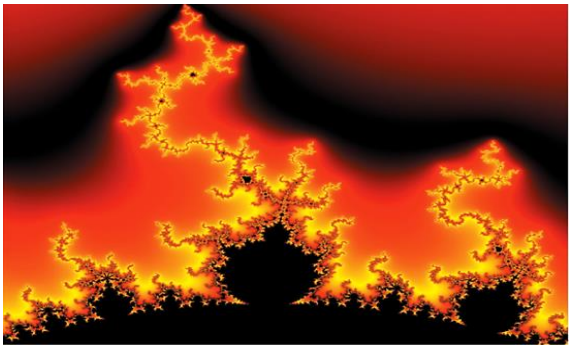


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