Journal University Management

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The works must be unpublished and refer to topics of university school management, management of university academic counseling, elements and conditions for reform in university school management, specific management models for each university context, inclusion as a fundamental tool for attending university diversityand other topics related to Social Sciences.

Presentation of Content

As first article we present, *Digital competencies and their use in teaching activities at the higher education level*, by BACAB-SANCHEZ, José R., CHI-CHAN, María Teresita de Jesús, LÓPEZ-PONCE, María Eugenia and VELAZQUEZ-CHE, Briceyra Guadalupe, with adscription at Tecnológico Nacional de México/ITS Calkiní, as second article we present, *The working conditions of university students in post-pandemic situations,* by YAÑEZ-FLORES, Sara Margarita, SALINAS-AGUIRRE, María del Consuelo, CHARLES-MEZA, Ángel Gerardo and GONZÁLEZ-MARTÍNEZ, Karina, with adscription in the Universidad Autónoma de Coahuila, as third article we present, *University research management models: a literature review*, by ALONSO-CALPEÑO, Mariela Juana & PÉREZ-JIMÉNEZ, Carlos, with adscription in the Instituto Tecnológico Superior de Atlixco and Universidad Tecnológica de Puebla, as last article we present, *SDG 4: towards an inclusive education from international guidelines and public policies in Mexico*, by MARTÍ-REYES, Mireya, with adscription at the Universidad de Guanajuato.

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Digital competencies and their use in teaching activities at the higher education level

Las competencias digitales y su uso en actividades docentes en el nivel de educación superior

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Abstract

The present work is an analysis of the digital competencies of higher education teachers in the northern zone of the State of Campeche in order to know the concrete actions they perform with these technologies in activities such as planning, development and communication of their classes. This is a descriptive study with a mixed approach. The design is non-experimental, correlational and cross-sectional since the information is collected at a single moment. The results show that 39.2% of the teachers use 3 to 4 devices simultaneously in spite of their economic difficulties. Regarding the use of specialized software in their area to prepare their work, 27% mentioned that they always use it. In this study, a weak correlation (.242) at a significance level of .05 was found between the effective use of search engines for online information and the fact that they have to be added to the classroom activity plan to solve problems.

Analysis, Competences, Correlational, Teachers

Resumen

El presente trabajo es un análisis de las competencias digitales de los profesores de educación superior de la zona norte del Estado de Campeche para conocer las acciones concretas que realizan con estas tecnologías en actividades como la planeación, desarrollo y comunicación de sus clases. Este estudio es de tipo descriptivo con un enfoque mixto. El diseño es no experimental, correlacional y es transversal ya que se saca la información en un solo momento. Los resultados muestran que un 39.2% de los maestros emplean de 3 a 4 dispositivos simultáneamente a pesar de sus dificultades económicas. Respecto al manejo de software especializado en su área para elaborar sus trabajos el 27% menciona que siempre lo emplea. En este estudio se encontró una correlación débil (.242) a un nivel de significancia de .05, entre el empleo de los motores de búsqueda de manera efectiva de la información en línea y el que se tenga que agregar al plan de actividades de aula para resolver problemas.

Análisis, Competencias, Correlacional, Profesores

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Introduction

The use of digital skills represents for this time a condition for the competitiveness of a teacher. It is necessary to teach today's students what will be demanded tomorrow. Therefore, a modern teacher must keep up with and know about various modern technologies, own them, be able to apply them in practice (Serezhkina, 2021). Digital competence is key to lifelong learning In a society that has become increasingly digitized, the demand for digitally competent teachers has evolved, imposing the need for new approaches when it comes to the integration of technology in education (Instefjord and Munthe 2017).

The adoption and integration of ICT is of paramount importance to access knowledge and keep up to date with modern developments. There are global resources available such as digital libraries where teachers, students and professionals can access and share research and course materials at any time of the day and anywhere (Suárez-Rodríguez et al, 2018).

In some regions, such as Europe, they have the European Digital Competence Framework (DigComp, 2013, 2016), which proposes incorporating the digital competences necessary for citizens to fully participate in today's knowledge-based digital society (Marimon-Martí et al. 2022).

On the other hand, this maelstrom that Mexico is going through pressures it to generate changes in its teaching and learning processes and ICTs are considered in the introduction of educational systems as necessary resources for adoption (Baelo and Cantón, 2009). In this reality, ICTs become indispensable instruments in current education since they optimize the effectiveness of the educational process (Sancho et al., 2008), and allow the intervention and collaboration of people for the collective elaboration of knowledge and sources. search for quality. Therefore, they are in charge of improving, contributing, proposing and articulating procedures, methods, ways of working, organizations and artifacts that allow society to be informed faster and with better quality (Cruz et al., 2019).

In this integration process, teachers acquire singular importance in the use and application of ICT (Vera et al., 2014). The introduction of ICT in the classroom has opened new horizons to improve the quality of education and in the processes to generate new products. Of course, it has exposed the digital skills of teachers in their preparation to the test (Prendes et al., 2010). At present, the range of opportunities offered by ICT in education are wide (Salinas, 2004).

Third, a research dimension must be added, and fourth, a technological dimension that adds ethical and legal issues. For Mexico Zempoalteca et al. (2017) investigate in terms of perception, the ICT training of teachers and students in relation to digital competence and the use of ICT in Web 1.0 and 2.0 environments. They find that there is an age range of fifty-five years or more, in which they mention that there is a strong relationship between ICT training and digital skills in teachers of that range.

This work is justified by the lack of information related to the incorporation of digital skills in the Mexican southeast and because for the Campeche region it is essential to obtain a paradigm shift in the educational system that is durable and not temporary, which today it is presented as a leap in time and that it corresponds to a need in the state educational system in the training of future professionals. This hardship permeates even more in our context, since the reality of the classes is much richer in content than what is revealed in the established plans.

The objectives pursued by this research are: a).- Identify the technological tools most used by higher education teachers in the northern part of the State of Campeche to establish the relationship between the time of use and the age of the teachers. b).- Analyze the technological or digital teaching skills of higher education teachers in this area to know their use and importance in the educational activities of teachers. c).- To analyze how significant is the use of ICT in the activities of teachers to locate their relationship among themselves.

Theoretical framework

In general, the ICT Competency Standards for Teachers project (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2011) mentions three approaches to educational change: First ICT basics, second, the deepening of knowledge and third, the generation of knowledge. The basic notions of technology consist of preparing students, citizens and workers, so that they are capable of understanding new technologies and can thus support social development and improve economic productivity. Regarding the deepening of knowledge, it consists of understanding the capacity to carry out information management. Digital competencies are the perspective of the new educational training, with a clear purpose of educating and preparing students (Manco-Chavez, et al. 2020), giving them the opportunity to appropriate new knowledge, ICT tools that serve to include them within the educational system (Lévano et al. 2019). Likewise, the proposal of Martinez-Sala and Alemany-Martinez (2022) is to optimally integrate a social network as a complementary learning tool that serves the acquisition of digital competencies.

In other words, digital competencies are the acquired capacity and knowledge of the use of technologies that allow a better disposition to articulate actions of a planning, communicative and investigative nature.

The terms related to ICT contemplate all forms of technology used to create, store, exchange and process information in its various forms, such as data, voice conversations, still or moving images, multimedia presentations (Tello, 2007). Today, the computer goes from being a sophisticated and fast calculating machine, to being an essential machine to communicate and transmit knowledge that can be given through the multimedia environment where sound, voice, text and the ability to work together at a distance they are a reality (Custodio and Suárez, 2014) and in the covid-19 period this was intensely required in the Mexican educational system.

The demand for the implementation of ICTs in vocational training is currently in force, as mentioned by Lévano et al. (2019) it is to be considered that the digital skills of the 21st century boost the competitiveness and innovation capacity of institutions.

Pedagogical competencies consist of the teacher's personality, interests, values, and ideals, professional knowledge of the subject matter taught, teaching methods, and development of communication skills, diligence, foresight, professional independence, and quick comprehension. of sensory information (Ikromova, A., 2020).

Appropriation is the way in which teachers incorporate ICT into their daily class activities (Valencia-Ramírez et al 2016). On the other hand, the adoption of ICTs is governed by the characteristics of teachers, such as age, gender, educational experience, knowledge of ICTs and attitudes towards them (Lawrence and Tar, 2018). Due to the latter, being able to integrate and use technology for educational purposes implies having a set of generic skills suitable for all situations, both personal and professional, and this is what is known as professional digital skills.

Davis (1989) formulates the Technology Acceptance Model (TAM), which suggests that the attitude towards the use of an ICT is considered in two prior variables: perceived usefulness and perceived ease of use. Perceived usefulness considers extrinsic or self-motivation of the user and is defined as "the degree to which a person believes that using a particular system would improve his or her job performance" (Davis, 1989, p.320), while perceived usefulness is perceived ease of use and is "the degree to which a person believes that using a particular system will not require effort" (Davis, 1989, p. 320).

The conceptualization that can be given to digital competencies always indicates that it is a concept that is related to the use and mastery of different technological tools, as well as the associated skills required for their correct use. (Sandí. and Sanz, 2018). Teachers should consider that education can achieve attitude changes in students (Verdú, 1998).

Method

Study type and design

This study is descriptive, with a mixed approach. The design is non-experimental, correlational and transactional (Hernández et al., 2014). The method is the field study and the technique is the survey, with the questionnaire as an instrument.

Instrument

A questionnaire was designed that served as an instrument taking into account the ICT competency standards for teachers of the United Nations Educational, Scientific and Cultural Organization (UNESCO Institute of Statistics, 2013) and appropriated by the university. Javeriana de Cali-UNESCO in 2016. A part of socioeconomic data was considered that included 11 open questions related to the time spent using the devices, Internet access, hours dedicated to each activity, and work experience, among others.

In part 2.- What is related to the professional competences of the teacher is considered, it includes 12 questions on a Likert-type scale to determine the knowledge, use, and application of ICT.

In part 3.- What is related to the pedagogical competences of teachers is considered, here 13 questions are considered on a Lickert-type scale to determine knowledge, the use of teaching and learning strategies with the applications of ICTs in tasks and school activities.

In part 4.- What is related to the communication skills of teachers is considered, here 9 questions are considered on a Likert-type scale to determine the knowledge, use, and application of ICTs in terms of teacher communication.

Dimensions or variables	Number of items	Cronbach's Alpha
Professional skills	12	.911
Pedagogical competences	13	.927
Technological communication skills	9	.926

Table 1 Variables considered in the instrument.
Source: Own elaboration

Regarding the validity of the instrument, the theoretical framework of these ICT competency standards for teachers was taken into account and the expert technique was also used, that is, the validity was also supported by the judgment of three experts (Hernández et al., 2014)

The reliability of the instrument was obtained by applying a previous sample and subsequently obtaining the Conbrach's Alpha, having a result greater than 0.90 (Table 1).

Study participants

The participants were higher education teachers from the northern zone of the State of Campeche, Mexico, which includes the municipalities of Tenabo, Hecelchakán and Calkiní. From a total of 211 professors who work in higher education schools in the study area, a random sample of 74 professors was obtained, of which 41 were men and 33 women, considering 95% reliability and 5% reliability. maximum permissible error.

School	Total teachers	Teachers participating in the sample
school 1	105	27
school 2	16	8
school 3	14	6
school 4	32	11
school 5	23	8
school 6	21	14
Total	211	74

Table 2 Teachers participating in the study
Source: Own elaboration

The selection of the participants was done randomly, that is, depending on whether they were in their educational institution at the time of the application of the instrument, they were asked if they supported us by answering a questionnaire, those who accepted continued with the application and those who answered no, were told that it was all. It is worth mentioning that the surveys were conducted three months before the beginning of the pandemic at the end of 2019. The results obtained correspond to the study area contemplated in this work.

Results and discussion

In relation to the analysis of the identification of technological tools used by teachers

Some of them are shown below: The most used are laptops and cell phones with 27%, teachers who only use laptops were 21%, and are followed by those who use desktop computers, laptops, tablets and cell phones at the same time with 16.2%. In other words we can mention that 100% of teachers handle at least one device.

But 39.2% use 3 to 4 devices, which is understandable because they are interacting with the technological innovations that are more accessible. This is important since the pressure to use these devices was very marked on the one hand and on the other the socioeconomic conditions of the teachers are not the best, since a good part of them have a salary between 8,000 to 12,000 pesos per month.

In the studies of Vera et al. (2014) they find something similar to this study since the factor of the frequency with which the computer is used, results in 55% of teachers who use it, equivalent to the use of 5 times or more per week. Regarding the factor of adoption of technology based on interests (adoption in ranges), these same authors comment that 39% of teachers perceive themselves at the refined level, 33% at the advanced level and 28% at the basic level.

In relation to the analysis of professional competences

43% mentioned that they always have knowledge of the storage portals to develop their activities, 28% commented that they almost always have the knowledge, 18% allude that sometimes. On the other hand, 37% say that they always use storage portals (Graphic 1).

Consistent with the design of online materials for collaborative work with students, 35% of teachers responded that they almost always do it, followed by 27% who mention that sometimes, and 16% who say that they almost never and never design online materials for collaborative student work. This is important to consider since to the extent that the teacher encourages the use of the Internet to view their materials or activities, students accept these tools as part of their daily actions.

56% of teachers always use ICT to communicate with students, colleagues and family members, 27% mention that almost always. In other words, it is in the communication elements where technological skills predominate more markedly.

Díaz (2017) concludes something similar by stating that it is necessary to improve the computer skills of teachers so that they can guide students in the use of ICT for learning, through the development of digital skills. In the work of George and Salado (2022), it is reported that the assessment about the manipulation of digital content was positive, the response was in agreement and very close to totally agree, which reflects that teachers perceive themselves themselves as efficient users of digital content.
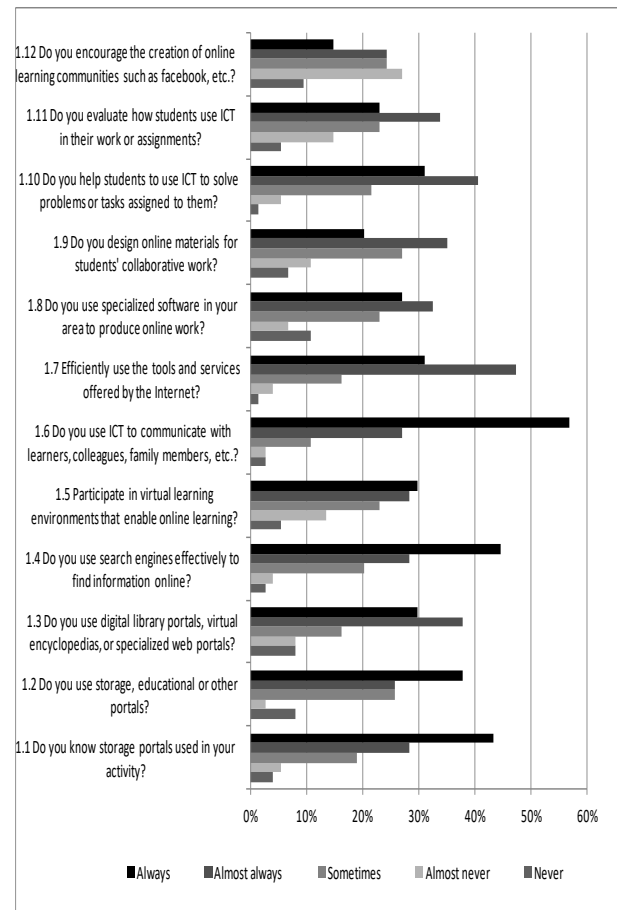
Graphic 1 Percentage of the perception of professional competencies in teachers
Source: Own elaboration

Regarding the analysis of pedagogical competencies

45% of the teachers almost always identify the problems that exist in their teaching practice and the opportunity that ICTs offer to solve them. On the other hand, 40% of them mention that they sometimes participate with their colleagues in discussions about the benefits of ICT for the planning of their activities. In other words, it is recognized that ICT can help to improve work activities, but less than half of them are interested in talking about the opportunity they have in front of them in reference to ICT (Graph 2).

BACAB-SANCHEZ, José R., CHI-CHAN, María Teresita de Jesús, LÓPEZ-PONCE, María Eugenia and VELAZQUEZ-CHE, Briceyra Guadalupe. Digital competencies and their use in teaching activities at the higher education level. Journal University Management. 2022

In another sense, 29% of the teachers surveyed mention that they always implement strategies for the use of ICT in the teaching and learning process according to each of their educational programs, 35% mentioned that they almost always implement these strategies. However, for the development of content that requires ICT to be carried out in their institution, 20% mentioned that they always do it, but 8% mention that they have never done it. In other words, it is one thing to think about the strategy and another is to generate activities that allow the development of said strategies. As we can see, there is a percentage of professors who are not using ICT as it should be and being able to contribute something to their institution that renews the way they see the teaching process.

On the other hand, 20% of teachers report that they always implement new experiences in students to generate new knowledge in their activities using cameras, audio, etc. These results are good from the point of view of the use of information technologies because at least there is a process of integration of ICT in the processes of the teachers and in the activities directed to the students.

In the work of Sa'ari et al. (2005), it was noted that teachers strongly agreed with 18.1% and agreed with 55% that they enjoyed using new tools for instruction. They also believed that computers are valuable tools that can be used to improve the quality of education with 55.6%. 56.9% of teachers agreed that they need more time to learn to use computers and more time to change the curriculum to incorporate improvements over technology at 60.6%.

On the other hand, teachers seem to express a number of concerns about computer application in the classroom, such as the lack of adequate training in aspects of technology and techniques in the use of Information Technology. They agreed that they need more training with technology, as 69.4% comment on that, They also require more training for curriculum and didactic strategies that can integrate technology.

There has been a relative advance in the use and implementation of ICT in the Teaching and Learning processes on the teachers' side and an improvement in relation to previous years. In comparison with the work of Sa'ari et al. (2005) in which the concern was in a higher percentage to apply computers in the classroom, in this study the application is taking place although not in its totality, there is a lack of improvement in such application since all that is available today in terms of ICT resources is being wasted, despite the fact that there is more online use for activities with students.

In the work of Torres-Florez, Rincón-Ramírez and Medina-Moreno (2022) it is concluded that the level of appropriation of digital competencies was of a medium-high level, this in reference to those associated with the knowledge and use of cloud storage platforms, collection of digital information from the internet for academic activities, knowledge of online tools for searching and storing information and making backup copies of documents on different devices. Therefore, it is important to implement new measures in the institutional environment to strengthen digital competencies.
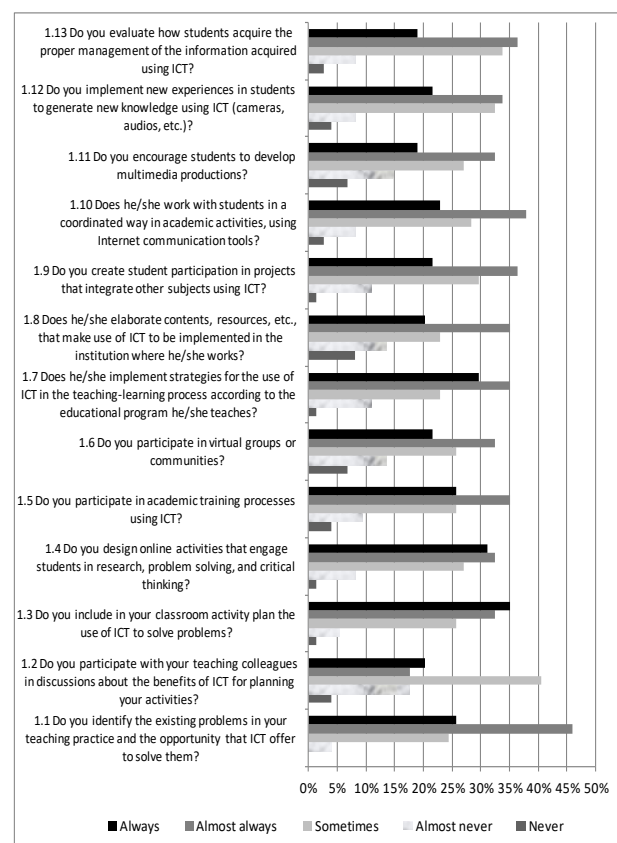
Graphic 2 Percentage of the perception of pedagogical competences in teachers
Source: Own elaboration

Regarding the analysis of the technological competences of teaching communication

In relation to aspects of teacher communication, the following is presented: 58.1% of teachers mention that they can always identify or know a word processor, spreadsheet or database. If it can be identified, it can be used, in This path is the use of the processor, spreadsheet or database since 48.6% indicate that they always use the word processor properly, 31.1% insinuate that they almost always. Likewise, it is also found that 39.2% denote that they always use a spreadsheet properly (Graphic 3).

In the studies by Vera et al. (2014) find something similar. According to the results, the word processor is being used by 60% of the teachers with a frequency of more than five times a week. This result also coincides with that found in the work of Sa'ari et al. (2005), which reveal that the participants with the highest level of skills were competent in word processing with 42.5%, followed by basic computer skills with 39.4%, spreadsheets with 14.4% and telecommunications with 13.8%. %, but had the lowest level of media communication skills with 7.5%.

In this study more than half responded that they recognize word processors and handle them adequately, that is, there is a coincidence with the result obtained in Sa'ari et al. (2005), but here in comparison with these researchers there is an improvement in the handling of media communication, which is understandable due to the progress that has been made in this area with the creation of electric mail and the invention of other forms of communication such as video-calls in the last decade.

On the other hand, 41% comment that they always use web resources and incorporate them into their subject plan, 32% list that almost always, 16% denote that sometimes (Table 4). The use of information available on the Internet among teachers is widespread. This result coincides with that found by Zare-ee (2011) where it is mentioned that all teachers reported having obtained or developed ICT-based materials for teaching and research. Escorcia-Oyola and Jaimes de Triviño (2015) also find that the greatest use of ICT presented in significant classroom projects refers to the media for communication.

Corresponds to the use of word processors, spreadsheets, presentation software, diagramming and web page design. On the other hand:
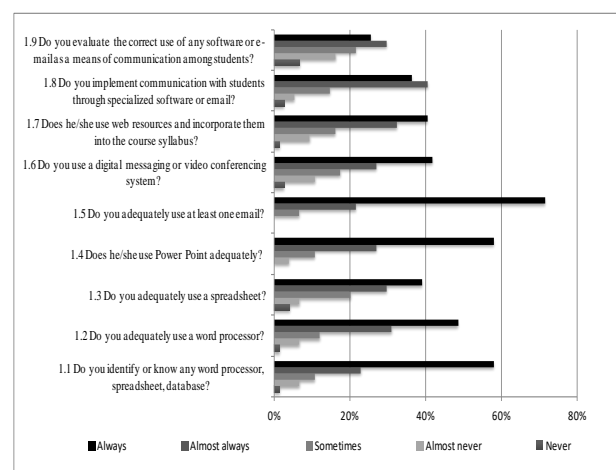
Graphic 3 Percentage of the perception of technological competences in teaching communication.
Source: Own elaboration

In relation to the technological competences and the age of the teachers

In reference to the reflection by age of the teachers surveyed, 48.6% present themselves in an age range between 33 and 41 years. They are followed with 29.7% by those between 42 and 50 years of age. Another 10.8% are between the range of 24 and 32 years of age. This indicates that 89.1% of teachers are between the ages of 24 and 50, that is, we have 2 generations of teachers teaching classes at the higher level (Hernández, 2021), the first are a generation that is characterized by registering a intensive profile in the access and use of ICT and the latter those who have shown to adapt easily to technological changes. However, we can also note that there is a 10.9% who are in an age range of 51 years and older, Although they use technology, they present a lower level of interaction compared to other age groups. This generation was prior to the global and digital era, but they are adapting to the use and application of all the tools and resources offered by ICTs.

However, this last generation, the older one, shows more equal adaptability traits regarding the mastery of the dimensions studied in this work, something that was expected due to the exposure to so many digital resources (Graph 4), since they present a more homogeneous valuation behavior, that is, 28% mention that they almost always make use of ICT in the three dimensions studied.

Also, older teachers progress more slowly but more evenly, that is, they show concern for learning and mastering ICTs in the dimensions of technological competencies, pedagogical competencies and communication competencies.
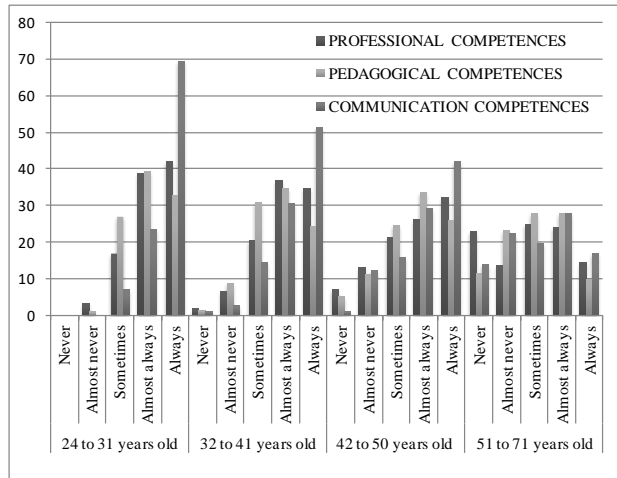
Graphic 4 Age of teachers and ICT skills
Source: Own elaboration

As Pérez (2005) mentions, a good part of this knowledge society remains connected to a screen and in that connection they weave their social relationships. On the training and preparation of new teachers Prendes et al. (2010) They find that students who are preparing to be teachers have different skills in the knowledge and connection of different computer equipment, they also have the skills to solve different problems through the use of the Internet.

We see that, as Rosario and Vásquez (2012) found, they dominate search resources, wiki pages, email, but neglect the more specialized search that can lead to better professional preparation, but it is understood that digital competence involves a learning process. complex, gradual and recurring, which encompasses the ability to adequately use digital tools and resources (Pozos and Fernández, 2018; Peñalva-Vélez et al 2018)

Regarding the analysis of how significant are ICTs at the higher level

By considering the qualitative variables and establishing them on a scale, the association of the assessment of perception with each of the dimensions considered in the study was determined. A Kendall's Tau b correlation of .949 was obtained with a significance level of less than .05, for technological or digital skills and the assessment levels of the scale.

That is, there is an association between this dimension and the established scale. Regarding the pedagogical competences, a correlation of .60 is presented with a significance level of .14, the technological competence of teaching communication had a correlation of 1 at a significance level of less than .05.

Subsequently, the level of association of two variables was measured to quantify the relational importance that, for example, an item from the technological dimension presents with another from the dimension of pedagogical competence or teaching and learning. This in order to determine how much efficient use of Internet searches occurs with the transfer to the teacher's activities in classroom activities.

We then seek to determine how the following action, Do you use search engines effectively to find information online? (V1), presents a degree of association with the following fact, Do you add the use of ICT to solve problems in your classroom activity plan? (V2). For this, Spearman's Rho correlation coefficient is calculated. A correlation of .24 was found at a significance level of less than .05, that is, the null hypothesis that there is no association is rejected and the alternative hypothesis that there is an association between the variables is accepted. In other words, We can mention that there is a relatively low association when using search engines effectively to find information with the fact of adding the use of ICT to solve problems in the classroom activity plan. In other words, the fact that teachers use search engines efficiently guarantees little that the use of ICTs be added to the classroom activity plan, since there is a weak association between these two situations (Table 3).

The following combination is elaborated: Do you add in your classroom activity plan the use of ICT to solve problems (V2), and it is compared to see if it presents a degree of association with the following fact, Do you participate with your teaching colleagues in debates about the benefits of ICT for the planning of your activities (V3). When we compare whether there is a relationship between the fact of adding the use of ICT to the classroom activity plan and the participation of teachers with their colleagues in discussions about the benefits of ICT for planning their activities, the results are encouraging.

The correlation is .46 at a significance level of .05. That is, discussing and talking with other teachers about the importance of ICT for their activities is beneficial and is associated with adding the use of ICT to solve problems in their classroom activity plans. This is relevant when by talking with other teachers there is a process of innovation to use ICT and consider them in the activities developed.

Variable	Variable	Spearman's Rho correlation	Next (Bilateral)
Do you use search engines effectively to find information online? (v1)	Do you include the use of ICT to solve problems in your classroom activity plan? (v2)	.242	.037
	Do you participate with your fellow teachers in discussions about the benefits of ICT for planning your activities? (V3)	.163	.167
Do you include the use of ICT to solve problems in your classroom activity plan? (v2)	Do you participate with your fellow teachers in discussions about the benefits of ICT for planning your activities? (V3)	.469	.000

Table 3 Correlation of the use of search engines effectively
Source: Own elaboration

When contrasting age with the variable, use the tools and services offered by the Internet efficiently (Table 4), there is a correlation (-.273) at a significance level of .05, that is, there is an association in the direction On the contrary, the more you get older, the efficient use of the tools offered by the Internet decreases, similar to what was found by Marimon-Martí et al (2022).

Variable	Variable	Spearman's Rho correlation	Next (Bilateral)
Age	Do you use search engines effectively to find information online?	-.275	.018
	Do you use the tools and services offered by the Internet efficiently?	-.273	.018
	Do you design online activities that engage students in doing research, solving problems, being critical?	-.208	.076

Table 4 Correlation of age and some variables of interest
Source: Own elaboration

Conclusions

This work reveals that 100% of teachers handle at least one device and 39.2% of them use 3 to 4 devices, but this does not guarantee efficient use of computer packages and services available on the Internet to improve activity. teacher. There is a relationship between the time of use of the devices to do activities related to teaching with the time of use of the computer or laptop. As Demeshkant (2020) concludes, apart from technical teaching skills related to the use of various devices such as interactive whiteboards, laptops or tablets, it is immensely important to increase teachers' awareness of the purpose of applying technology in The education.

Among the factors that are intertwined to assimilate ICT in the actions of teachers are institutions, resources and the teacher, (Lizárraga et al, 2020; Tapasco and Giraldo, 2017; Mumtaz, 2000; Umoru, 2012). Despite the fact that the survey phase was carried out before the pandemic, recent studies such as that of Serezhkina (2021) in Russia find that there is still a process of integration and appropriation among teachers of digital skills. In Greece, as reported by Perifanou et al (2021), in times of pandemic, around two thirds of teachers used digital tools extensively to find, evaluate and develop educational resources, as well as to teach.

Egúsquiza (2022) finds in Peru that although teachers acquire digital competence by training in the use of augmented reality, it is not capitalized in the application of learning activities, thus deriving more as recreational or destructive activities than for learning achievement purposes.

Regarding the management of specialized software in their area to prepare their work, 27% mention that they always use it. That is, there is a lack of better performance in the preparation and management of computer tools that lead to a better specialization in the professional training of young students in the State of Campeche.

Teachers almost always use the resources offered by ICT such as search engines, storage portals, digital libraries, virtual encyclopedias, specialized websites, as well as learning communities through Facebook or another, that is, , have a greater source of educational resources that allow efficiency in the work of teaching communication.

29% of teachers mention that they always implement strategies for the use of ICT in the teaching and learning process according to each of their educational programs, 35% mentioned that they almost always do so. However, for the preparation of content that requires ICT to be carried out in their institution, 20% mentioned that they always do it, but 8% mention that they have never done it and 13% express that they almost never do it. There is a group of teachers who have not incorporated actions in which students have direct contact with ICT as part of the fact or task. There is not an even distribution in all teachers in the ICT domain that facilitates its implementation in school activities.

In the teachers, 18% of them mention that they always promote in the students the elaboration of some multimedia production, there is an opportunity to improve in the design of the activities and consider the multimedia works within the portfolio of activities that the teachers could consider.

There is a significant positive relationship between adding the use of ICT to solve problems in their classroom activity plan and the debate that takes place among teachers about the benefits of ICT to plan their activities. This is an important result since the dialogue between the teacher colleagues helps disperse that the use of ICT is considered among their classroom activities.

It is not easy to integrate technology into classroom practices, but this is one of the challenges facing teachers in the 21st century. As Afshari et al. (2009), Effectively integrating ICT into learning systems is much more complicated than providing computers and ensuring an Internet connection. Technology integration takes time; time to learn these technologies, time to be adequately prepared to use it. For their part, Cabero-Almenara, et al (2020) find that the most valued areas have been Digital Pedagogy and Digital Resources.

But the best way to initiate the use of ICT is in a combined or mixed way, in which teachers participate themselves in the online update (Mirke, E., Cakula, S., Tzivian, L. 2019), learning from their own experience when participating in such training (Dabner et al., 2012). Because not only the future professionals coming out of the schools are favored but also the companies and the industry since through a better professional preparation, these would have a better efficiency and productivity, guaranteeing a better interaction in the markets.

Thanks

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The working conditions of university students in post-pandemic situations

Las condiciones laborales de estudiantes universitarios en las situaciones postpandemias

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Abstract

The combination of education and work in undergraduate students shows, on the one hand, the need to support family spending and, on the other, resolve situations of a personal, educational, and professional nature. As the students manifest, it has not been an easy task to bring both activities to a successful conclusion. The objective is to analyze the situations that university students experience when combining study and work after the reopening of educational and work activities. It is a quantitative, descriptive, and explanatory cross-sectional study (November-December 2021). The Education and Employment Status axis variable made up of simple variables such as type of contract, salary, number of hours worked, anti-COVID protection, business activity, and reasons for working; in addition to demographic and socio-educational variables. The students make it clear that they work out of economic necessity, acquiring work experience is left in a second or third moment.

Resumen

La combinación educación-trabajo en estudiantes de licenciatura evidencia, por una parte, la necesidad de apoyar el gasto familiar y, por otra, resolver situaciones de índole personal, educativo y profesional. Como lo manifiestan los estudiantes no ha sido una tarea fácil llevar a buen término ambas actividades. El objetivo es Analizar las situaciones que viven los estudiantes universitarios al combinar estudio y trabajo posterior a la reapertura de las actividades educativas y laborales. Es un estudio cuantitativo, descriptivo y explicativo de corte transversal (noviembre-diciembre 2021). La variable eje Educación y Situación laboral se integró por variables simples como tipo de contrato, sueldo, número de horas trabajadas, protección anti-COVID, giro de la empresa, y motivos para trabaja; además de variables demográficas y socioeducativas. Los estudiantes dejan de manifiesto que se trabaja por necesidad económica el adquirir experiencia laboral queda en un segundo o tercer momento.

Youth work, Online education-work, Working conditions, Post-pandemic situations

Trabajo juvenil, Educación-trabajo en línea, Condiciones laborales, Situaciones pospandémicas

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Introduction

The immediate effects that emerged in COVID-19 are available in different and well documented articles; however, visualizing the long-term effects on youth educational-labor situations is a topic under debate and in constant analysis by researchers from public and private institutions and international organizations.

Youth employment has always been marked by unfavorable situations; specialists indicate that during and after the COVID-19 crisis, the challenges for young people to look for and find work have increased.

ECLAC (2020) points out that in the case of students:

The most immediate impact has obviously been that the temporary cessation of face-to-face activities at IES (higher education institutions) has left students, particularly undergraduates..., in a totally new situation and without a clear idea of how long it will last with immediate impacts on their daily life, the costs incurred and their financial burdens and, of course, the continuity of their learning and international mobility.

Young people, during and after the pandemic, have had to reorganize their daily lives: first to adapt to confinement, then to the new situations brought about by the reactivation of activities and, as if that were not enough, they have felt the impact of the health crisis on their academic training, which increases the instability of their future employment.

In addition to the above, educational-labor situations increase inequalities in the different areas where the university population lives, coexists, and interacts, as pointed out by the UN (2022) "The number of young people without work is growing worldwide, but in some regions the situation is worse because the gap between men and women is added".

It is in young people where the contraction and destabilization of the labor market falls, since the ILO (2022) comments that "young workers are less likely to have seniority and the types of contracts that distinguish them to be retained by employers and therefore, they are more likely to lose their jobs."

Likewise, Gómez (2021) indicates:

Not only could periods of unemployment lead to depreciation of human capital, impacting productivity, but they could also create signals of low productivity to employers (without this necessarily being true). On the other hand, the impacts on the emotional well-being of young people could affect their expectations and aspirations, limiting job search and generating poor-quality job matches.

What has been stated above is only a superficial appreciation of the experiences and situations that impact the world of youth, for this reason it is important to show a closer vision of that reality of university students through their opinions expressed in a survey that aims to capture their experiences by combine study and work in post-pandemic times.

The article the working conditions of university students in post-pandemic situations is a study that derives from the general project Evolution of the educational-labor situations of undergraduate students in times of pandemic, which is being worked on within the CA Innovation and Educational Development-Labor assigned to the Faculty of Science, Education and Humanities and that is registered with the corresponding instances of the UAdeC.

Objectives

General objective

Analyze the situations experienced by university students when combining study and work after the reopening of educational and work activities.

Specific objectives

- Describe the demographic and socio-educational characteristics of the participants.

- Identify the technological-digital resources that the students used and shared to solve the study-work combination.

- Identify the educational modalities preferred by students who study and work

- Detect the prioritization of study or work by combining both activities.

- Identify the reasons for combining study-work.

Methodology

The article the working conditions of university students in post-pandemic situations, is a quantitative, descriptive, and explanatory cross-sectional study (November-December 2021).

Scope of study and sample

The students of the careers of Education Sciences (LCE) and Spanish Letters (LLE) participated voluntarily answering the measurement instrument designed in Microsoft Forms©.

In the year 2021, the LCE had 145 students, of whom 85.51% were women and 14.48% were men. What alludes to the LLE, the population enrolled in that period was 93 students, of which 21.50% were men and 78.49% were women.

The publication of the survey was available to the different groups of both careers, since a census sample was intended, however, since participation was voluntary, the sample was based on availability.

Variables

The first section contained the following axis variables and their simple variables:

Demographic data: sex, age, marital status, economic level and if you are a foreigner

Educational data: semester, academic program, frequently used technological-digital resources and with whom they are shared, preferred educational modality, study or study and work.

In that same section and detaching from the Education and Employment Situation axis variable, the following variables were included:

- Combine study and work.

- Type of contract.

- Working hours.

- Number of hours worked.

- Anti-COVID-19 protective equipment.

- Type of organization where you work.

- Salary per month.

- Reasons/motives to work.

Finally, a Comments section was included that was used to emphasize the results presented in this article.

Contextual framework

A nodal point that it is necessary to consider is why young people combine study and work; in 1981 Torrado commented that "it is a strategy to ensure the material reproduction of families in cases of scarcity of economic resources." Adding that "the labor of the wife or children can be used to compensate for the loss of income of the boss or his absence as a provider." (Cruz, et al, 2017)

On the other hand, Oliveira (1999) and García and Pacheco (2000) coincide in pointing out that the family structure where the father/mother was the provider is restructured and passes to a model of multiple workers "to compensate for the low salary levels of the work, especially in poor households" and where "The labor participation of children occurred to a greater extent in households where the head was located in non-salaried jobs" (Cruz, et.al. 2017).

As can be seen, after years the economic-family conditions have not changed, the need for the different members of the family to enter the labor force has intensified since the health crisis and the subsequent reopening of social activities, educational, economic, and labor.

The provider is restructured and passes to a model of multiple workers "to compensate for the low salary levels of the workforce, especially in poor households" and where "The labor participation of children occurred to a greater extent in households in which the head was located in non-salaried jobs" (Cruz, et.al. 2017).

To enter the labor force has intensified since the health crisis and the subsequent reopening of social activities, educational, economic, and labor.

It is noted that in Mexico and Latin America the labor market has shown an increase in the activities of the tertiary sector "mainly characterized by the predominance of the so-called informal activities, accompanied by a process of labor deregulation in the formal productive sector." In addition, the flexibility of the labor market has allowed the incorporation of the youth labor force, but "places them in precarious jobs that are not very encouraging for the needs of families." (Horbath, 2004, pp. 199-200)

In a similar proposal, Randi (2020) indicates "Labor insecurity increases drastically in contexts of crisis, with the consequent loss of employment and lack of social protection"; noting that "Young people, the elderly and women were the most affected by the loss of employment." (Quattrocchi, P., Flores, C., Virgili, N., Cassullo, G.L., de Marco, M., Moulia, L., & Siniuk, D., 2020)

The Labor Observatory (OLA, 2022) points out that current employment trends in Mexico are characterized, among other things, by:

The specialization of knowledge, the workforce is concentrated in PyMES and the tendency to use temporary assignments and contracting for fees, increases as employers move towards contracting external providers to meet immediate needs.

What alludes to the forms of hiring, salary, and other benefits that the corresponding legislation considers is an issue that is still pending.

In this same sense, Gómez (2021) pronounces "The effects on education, employment, and mental health derived from the pandemic threaten to generate deep and long-term impacts on the employment trajectory of young people..."

The data on job loss is not encouraging in this segment of the population since "At the start of the pandemic, 2 out of 5 young people globally had a reduction in their income." (Gomez, 2021)

Before the pandemic, the students were working, but with the start of the quarantine they were left unprotected overnight due to their closure; there were no explanations, there was no compensation or at least no help to cope with these months of uncertainty.

The Mexican Institute for Competitiveness (IMCO, 2022) reports that "The majority (48.8%) of young people who have a job work between 35 and 48 hours a week and 44.9% of them have a maximum remuneration of $5,186 pesos monthly".

Likewise, it is pointed out that young people who seek to be economically active face daunting challenges than the average worker, since:

They are the population group with the highest unemployment rate, at 6.4%, almost double the national unemployment rate (3.5%); In addition, in the first quarter of 2022, an informality rate of 67.4% was registered for young people, the second highest after the elderly (75.8%) and which is above the average informality rate in the country, of 55.2%

As if these figures are not enough, the IMCO indicates that "Young people who enter the labor market with informal employment have a greater probability of remaining in [that] condition throughout their professional career."

In this sense, formality would be the most desired option for young people who today combine study-work and tomorrow would be the graduates who enter the productive sector with better salaries, benefits, retirement savings funds, disability compensation that, unfortunately, this does not occur in most cases.

In addition, the fact that precariousness in youth employment stems from the lack of opportunities to gradually acquire the experience required by employers and that at the end of the day, the lack of it is what forces employers to young people to become self-employed and accept informal jobs that guarantee them neither experience nor decent and dignifying jobs.

Analysis of results

Description of the sample

The measurement instrument was designed and applied online using Microsoft Forms©; the total were 165 students of the degrees in Education Sciences and Spanish Letters who voluntarily participated; however, what alludes to the combination of study and work, the participating population was 44.85% (n=74). From this clarification, the frequencies, and percentages of the 74 participants will be 100%.

Of the 74 participants, 72.97% are women, 24.32% are men (n=18), only two people preferred not to answer, and the ages of the participating students ranged from 17 to 24 years.

Regarding the marital status of women, 58.11% are single; 5.41% are single with children; four reported being married, of which two have children; one lives in free union, and another is a widow.

On the other hand, 22.97% of the men are single, only one indicated living in a consensual union. Those who preferred not to answer are single.

Regarding the socioeconomic level, 52.70% (n=39) of the women and 16.22% of the men indicated that their level is medium, while 8.11% of each group was located at the low level; 12.16% of the women preferred not to answer.

The states of Veracruz, Chihuahua, Zacatecas, Guanajuato, and Guerrero, as well as Nuevo León and some cities in Coahuila, are the places of origin of 16.22% of the students who stated that they were foreigners.

Education and Work

It is identified in Table 1 that the students of the 3rd and 5th semester were the ones with the highest participation; What refers to the students who preferred not to answer are from the 5th and 7th semester of Spanish Letters.

Variable	Fr	%
5°	21	28.38
3°	21	28.38
7°	17	22.97
1°	15	20.27

Table 1 Students of participating semesters

With the reactivation of activities, the schools and faculties of the UAdeC began to carry out tests of hybrid classes; At that time, the students began to show concern about returning to class fully in person, but with the fear of possible contagion. For this reason, they were asked, If you had the option to choose, which educational modality would you prefer? Table 2 shows that the opinions in this regard are not definitive.

Sex	Variable	Fr	%
Woman	Face-to-face	24	32.43
	Hybrid	16	21.62
	Online	14	18.92
Man	Face-to-face	8	10.81
	Hybrid	7	9.46
	Online	3	4.05

Table 2 Preferred educational modality by sex

41.89% of the students indicated that the classes were in person, including two single mothers between the ages of 17-24 (3rd and 5th semester); In addition, as an LCE student expressed "Undoubtedly we need to return to face-to-face classes, it is not the same online" (Single with children, 21-24 years old).

While 32.43% of the participants suggest hybrid classes, but an LLE student expressed "In the few meetings we have had, I have noticed that some colleagues, very young, do not comply with the sanitary measures. I am very concerned that in an eventual return to school this type of carelessness puts everyone's health at risk" (Single with children, 33-36 years old). In this preference is located a single mother of 3rd semester (17-20 years old),

22.97% of students prefer the online modality; In this opinion group there are two single mothers aged 21-24 (3rd and 7th semester) and one between 25-28 years old (3rd semester) married with children.

The people who preferred not to answer (sex), considered the face-to-face and the online study.

Regarding study and work, 81.08% combine both activities and 16.22% eventually work; the students who preferred not to answer, one combines both activities and the other person eventually works.

To carry out studies and work online, it is necessary to have digital technological resources (RTD) that help them solve the combination of both activities; For this reason, they were asked which devices they use most frequently.

The results presented in Table 3 show that 33.78% use the laptop and 29.73% use the high-end smart cell phone.

Sex	Variable	Fr	%
Woman	High-end smart phone	18	24.32
	laptop	18	24.32
	Low-end smart phone	15	20.27
	Tablet	3	4.05
Man	laptop	7	9.46
	High-end smart phone	4	5.41
	Desktop	4	5.41
	Low-end smart phone	3	4.05
PNC	Desktop	1	1.35
	laptop	1	1.35

Table 3 Use of RTD for study and work

Another group pointed out that low-end Cell Phones, Desktop Computers and Tablets are used less; however, these RTDs make online interactions difficult, for example, if the camera is turned on, the audio and/or microphone is misconfigured.

One of the students indicated that "if we had more alternatives we would use better equipment, but at the moment it is what we have and what it is enough for us" (Man, single with children, 17 to 20 years old).

The confinement as part of the strategies to avoid contacts and possible routes of contagion of COVID-19, brought problems in the use of RTD; What used to be exclusive to one person was shared with other family members. To identify these incidents, they were asked: With whom do you most frequently share technological-digital resources?

It is identified in Table 4 that the women who combine both activities mainly share them with their brothers and friends, although 17.57% stated that it is not necessary for them to share.

Variable	Fr	%
Brothers	16	21.62
I don't need to share	13	17.57
Friends	12	16.22
Fathers	3	4.05
Sons	2	2.70
Partner	1	1.35

Table 4 RTD sharing: women

Regarding the situation of the 18 men, both those who combine both activities and those who eventually work, 13.51% share them with their brothers and 9.46% do not need to share them; The same situation occurs for those who at the time preferred not to answer (sex).

Study and Work: Pandemic Situations

As part of the study and to be able to detect the situations in which they developed when studying and working during the post-pandemic, they were questioned When you combine study and work, do you do it... both the women who combine both and those who eventually work, did not stop attending their workplaces.

Table 5 shows the situations that prevailed at the times when activities began to be reactivated, a minority prioritized academic work and others, the fewest, stated that they worked outside school hours.

Variable	Fr	%
Attending the workplace and interacting with my online classes	28	37.84
Combining face-to-face work and online work according to work needs	9	12.16
Attending the workplace, but I'm having trouble interacting with my online classes	8	10.81
I combine face-to-face with online work according to the academic work	7	9.46
I work when it is not school hours	2	2.70

Table 5 Work and study: situations

As far as men are concerned, the same response similarities are presented; nor did men cease to be present in their workplaces.

It should be noted that the study-work combination is not only to bring them to fruition, but as a student indicated "Sometimes I have to travel to my place of origin because my place of work is there..." (Free Union, age 36 or more) and a student adds "I just hope that the teachers have consideration with whom we work…" (Married w/children, 21 to 24 years old)

They were asked if you work or eventually do, approximately how many hours do you work a day?

Table 6 shows the number of hours worked per day, where it was identified that the 51.35% worked from 6 to 9 hours, 37.83% from 3 to 6 hours and 8.11% worked from 9 to 12 hours a day.

Sex	Variable	Fr	%
Woman	3 to 6 hours	25	33.78
	6 to 9 hours	24	32.43
	9 to 12 hours	5	6.76
Man	6 to 9 hours	14	18.92
	3 to 6 hours	3	4.05
	9 to 12 hours	1	1.35

Table 6 Daily working hours: by sex

If, as stated by women and men who, after the reactivation of activities, attended their workplaces and worked 3 to 9 hours a day, it was unavoidable to ask if you go to your workplace, what percentage does the employer pay for? anti-COVID-19 protective equipment?

Various opinion groups are found in the women's responses (Table 7); Thus, while some indicated that they had to buy all the protective equipment, 21.62% indicated the exact opposite, some stated that their employer only provided them with 50%; a minority were not very clear about the percentage of participation they had or the pattern in the purchase of anti-COVID-19 equipment.

Variable	Fr	%
You had to buy it	17	22.97
Employer paid 100%	16	21.62
The employer paid 50%	13	17.57
The employer paid 75%	5	6.76
I think 25%	3	4.05

Table 7 Protection against COVID-19: women

The same response situation is presented by men, but in an inverted way, that is, 9.46% indicated that the employer paid 100% for the anti-COVID-9 equipment and 8.11% that the employer did not pay anything; the frequencies for obvious reasons change, but the subsequent responses are like their female partners. But what is the type of organization where you work? As can be seen in the Table 8, the students mainly indicated Food Establishments, Family or Own Business; however, some of the students also work in department stores, educational institutions and in providing didactic advice.

Some students are also dedicated to recruiting, advising clients of a company; be nannies, but also a housewife and coach/referee of ball games.

Variable	Fr	%
Catering establishments	9	12.16
Family business	8	10.81
Own business	6	8.11
Department stores	6	8.11
Public and/or private educational institutions	6	8.11
Educational-cultural consultancies and/or cultural institutions	6	8.11
Convenience stores	3	4.05
Print and electronic media, editor/proofreader	3	4.05

Table 8 Business/Institution type: women

The students mainly indicated that they worked in food establishments, but unlike the women, some worked in food, industry or construction companies; only one, in each case, work in their own business, Taquerias, "we are musicians" and among other editors/correctors.

An important question is approximately, what is your salary per month? In the group of women, the highest percentage earns between $500.00 and $1,000 pesos per month and only one student indicated earning more than $5,00.00 pesos (Table 9).

For the purposes of the analysis, they were grouped by salary coincidence, thus in the first group 16.22% are those who work between 3 to 9 hours a day and also indicated attending their work in person, but prioritizing academic work; This group works in the Family Business or their own, but also in convenience and/or department stores and food stores.

Variable	Fr.	%
$500.00 to $1,000.00 pesos	12	16.22
$3,500.00 or more	11	14.86
$250.00 to $500.00 pesos	7	9.46
$2,500.00 to $3,000.00 pesos	6	8.11
$3,000.00 to $3,500.00	6	8.11
$1,000.00 to $1,500.00 pesos	4	5.41
$1,500.00 to $2,000.00 pesos	4	5.41
$2000.00 to $2,500.00 pesos	3	4.05
$5,500 or more	1	1.35

Table 9 Approximate monthly salary: women

Women who earned between $3,500.00 pesos or more or between $1,000.00 to $1,500.00 pesos, work in food establishments, family, or own businesses and in private educational institutions and work 9 to 12 hours.

The other groups, based on the monthly payment, present similar characteristics in terms of hours worked, attention/attendance to study-work... of course, there are differences between priorities, but no robust or dissimilar opinion group was detected in terms of these relationships presented.

The comments made around the study-work combination show the concern of young people on the subject, "I consider it pertinent to add that even by combining study and work in my daily routine I have been doing well, sometimes the burden is difficult, but I have coped adequately" (Man, single with children, 17-20 years old);

The Table 10 shows that, in the case of men, there are certain changes with respect to the daily salary received; the majority earn between $3,500.00 pesos or more and, the men who work in Food, Industry and/or Construction Companies earn, in that order, $8,000.00 pesos, $14,000.00 and $15,000.00 pesos upwards and work from 6 to 9 hours in the case of the first two items and from 9 to 12 hours in the last one.

Variable	Fr.	%
$3,500.00 or mores	7	9.46
$500.00 to $1,000.00 pesos	3	4.05
$2,500.00 to $3,000.00 pesos	2	2.70
$1,500.00 to $2,000.00 pesos	1	1.35
$1,000.00 to $1,500.00 pesos	1	1.35
$3,000.00 to $3,500.00	1	1.35
$8000.00 approximately	1	1.35
$15,000 onwards	1	1.35
$14,000. 00	1	1.35

Table 10 Approximate monthly salary: men

The case of the student who stated that he worked in "la p***** fábrica" (sic), He earns between $500.00 and a thousand pesos a day working 6 to 9 hours a day.

To emphasize the results, a comment indicates "The fact that we work does not mean that we are earning a great salary, so that they understand why we have so many problems..." (Men, single w/children, 17-20 years old).

They were asked what is the type of contract with which you are hired? Table 11 shows the forms of contracting through which the students have entered the productive sector.

Variable	Fr	%
Indeterminate employment relationship	24	32.43
Verbal contracting	7	9.46
For a certain time	7	9.46
For seasonal work	5	6.76
By learning	4	5.41
By trial period	2	2.70
Family business	2	2.70
For initial training	1	1.35
I give private classes	1	1.35
I am not hired by anyone	1	1.35

Table 11 Types of contract: women

The different types of hiring do not show robustness in wages or working hours. For example, in hiring by indeterminate employment relationship, 20.37% work from 6 to 9 hours and work in the family business or their own, but also in department stores, convenience stores or food establishments.

While in a family or own business you can earn $250.00 to $500.00 pesos a day in similar businesses, the salary ranges from $2,000.00 to $2,500.00 pesos. The same thing happens with working hours: some work 3 to 6 hours a day, others 6 to 9 hours and even 9 to 12 hours a day.

Two cases were identified that are worth comparing: a woman (single without children) eventually works and her employment relationship depends on whether her services are required "I give private classes, I am not hired by anyone", she earned approximately $250.00 to $500.00 pesos per day and worked from 3 to 6 hours a day, while the woman (Free Union) who indicated for Outsourcing, worked as an editor/proofreader and earned an average of $3,500.00 pesos or more, with the same working day.

In Table 12, it can be seen that men present similar characteristics in the types of contracts and salaries, the difference is that some men work in factories, industry or construction and, as previously mentioned, they are the ones who receive higher salaries; As the student who indicated to work in construction, his workday was from 9 to 12 hours a day and of course, his contract is for specific works.

Variable	Fr.	%
Indeterminate employment relationship	9	12.16
verbal contracting	2	2.70
By learning	2	2.70
By specific work	2	2.70
For seasonal work	1	1.35
Self-employment	1	1.35
Substitution contract	1	1.35

Table 12 Types of contract: men

Finally, they were asked if you work, what are the reasons for working? This question allows us to close the educational-labor activities carried out by both women and men of the degrees in Education Sciences (LCE) and the degree in Spanish Letters (LLE) and, with them, the combination of these activities is justified and understood.

The women stated that personal expenses were one of the reasons for combining study-work; however, these expenses were not exempt from supporting family situations, for example, this item refers to Acquire work experience, support family expenses, pay career expenses, update resources, pay for telephone/data service, support of the couple/ sons.

Evidence of this is indicated by a comment made by a woman "Family spending includes rent payments for the room in which we live, internet payment, food, school payments and gynecologist consultations, as well as medicines, that we are expecting a baby" (Married with children, 25-28 years old).

Variable	Fr	%
Personal expenses	15	20.27
Pay the expenses of the race	9	12.16
Gain work experience	9	12.16
Update technological resources	6	8.11
for online education	6	8.11
Support family spending	4	5.41
Spouse/child support	2	2.70
Pay phone service/	2	2.70
data for study/work online	1	1.35

Table 13 Reasons to work: women

Interesting fact is that only 9 of 54 women indicated that they worked to gain work experience and the salary was distributed to personal expenses, support family expenses, pay career expenses and pay for telephone/data service for study/work online.

As identified in the results, the students, in addition to working, learn to distribute and thereby contribute to the family economy. The people who preferred not to answer (gender) present the same tendencies in their personal expenses.

As has been reviewed in the course of this analysis, men present similar tendencies in educational-labor situations; For example, 10.81% of the students use Personal Expenses to support family expenses, pay for their studies, and update technological resources for online education.

Variables	Fr	%
Personal expenses	8	10.81
Pay the expenses of the race	5	6.76
Support family spending	3	4.05
I am the main breadwinner of my house	1	1.35
Gain work experience	1	1.35

Table 14 Reasons to work: men

The student who indicated I am the main breadwinner in my house pays his salary in Support family spending; however, only one of the 18 participating men worked to acquire work experience and the salary received is used to update technological resources for online education.

Work experience, although necessary, goes to the background when personal and family economic needs are prioritized that would allow them to face emergency situations derived from the health crisis.

Conclusions

The working conditions of university students in post-pandemic situations show that women and men, single or married with or without children, experience similar working conditions; Not a single group of opinion was found, which marks the diversity and heterogeneity in the youth population and in a labor market that, while providing job opportunities, is not entirely rosy when it comes to providing protection to its workers.

In both populations, attendance at the workplace was punctual and from there the classes that were projected online were attended; however, the technological resources did not present the desirable characteristics for a favorable transmission and interaction.

Since attendance at the workplace did not stop, the anti-COVID protection was shared by both them and the employer, although it is insisted, this depended on the type of company/institution/business where one worked; most of the students worked in the tertiary sector, although some of the men reported working in the manufacturing and construction sector.

In this regard, Horbath (2004) points out that the labor market has shown an increase in the activities of the tertiary sector "mainly characterized by the predominance of the so-called informal activities, accompanied by a process of labor deregulation in the formal productive sector." (p.199)

Likewise, it was identified that the working conditions of university students in post-pandemic situations were marked by disparities in the working day and the monthly salaries received; Thus, while in their own or family businesses an average of $500.00 to $1,000.00 was earned, in that same line of business, the salary increased or decreased as well as the hours worked.

The IMCO (2022) reports that "Most young people who have a job work between 35 and 48 hours a week and 44.9% of them have a maximum salary of $5,186 pesos per month."

Men, because they work in the food, manufacturing, or construction industry, had higher salaries, but also their daily working hours and what to say about the types of hiring, where the participating population presents serious risks and job instability.

In this sense, Horbarth pointed out that the youth labor force, "[is] located in precarious jobs that are not very encouraging for the needs of families." (2004, p.200)

The working conditions of university students in post-pandemic situations were framed in the economic needs and family situations that the students manifest; Although the minority indicated that they were single mothers/fathers or married with children, this fact overlaps with working to gain experience; young singles are in the same situation.

This phenomenon of working coincides with what Torrado (1981) commented "is a strategy to ensure the material reproduction of families in cases of scarcity of economic resources."

Post-pandemic working conditions do not differ much from conditions before the health crisis; that is, youth employment was and is in crisis.

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University research management models: a literature review

Modelos de gestión de investigación universitaria: una revisión de literatura

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Abstract

In the literatre, the lack of activities related to research management in Higher Education Institutions (HEIs) has been identified to promote the products derived from the research process towards transfer. This research work aims to identify university research management models and frameworks that have been developed since 2010 under the management approaches of research organizations, as well as project management in research groups. For this, an integrative review of the literature was carried out among different authors who have made contributions to the theoretical body of the subject using the search and evaluation methodology for inclusion. This research is important because it will provide valuable information for those responsible for the research areas in HEIs, since it will show them a range of options that have been developed to guide this management process and will allow them to decide on the convenience of adopting them or, adapt them to your institutional research strategy.

Management of university research, models and frameworks, review

Resumen

En la literatura se ha identificado la carencia de actividades relativas a la gestión de investigación en las Instituciones de Educación Superior (IES) para impulsar los productos derivados del proceso de investigación hacia la transferencia. Este trabajo de investigación tiene como objetivo identificar modelos y frameworks de gestión de investigación universitaria que han sido desarrollados a partir del año 2010 bajo los enfoques de administración de organizaciones de investigación, así como el de gestión de proyectos en grupos de investigación. Para ello se hizo una revisión integrativa de literatura entre diferentes autores que han realizado aportes al cuerpo teórico del tema utilizando la metodología de búsqueda y evaluación para inclusión. Esta investigación resulta importante porque proporcionará información de valor para los responsables de las áreas de investigación en las IES ya que les mostrará un abanico de opciones que han sido desarrolladas para guiar este proceso de gestión y les permitirá decidir sobre la conveniencia de adoptarlos o bien, adaptarlos a su estrategia de investigación institucional.

Gestión de investigación universitaria, modelos y marcos de trabajo, revisión

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Introduction

Innovation is one of the pillars of a country's competitiveness and progress, which is why technology transfer contributes to the development of regions through government-university-business synergies (De Moortel & Crispeels, 2018).

By transferring their scientific-technological advances to society, industries and markets, universities generate value and increase innovation-based productivity (Cruz Novoa, 2016). Globally, countries such as Sweden, Belgium, Singapore, Germany, the United Kingdom, Norway, Finland, Israel, the United States and Switzerland have positioned themselves over the years as leaders in promoting university collaboration with industry, and the result of this is reflected in their competitiveness and innovation indices (WEF, 2018).

However, in developing countries such as Mexico, this rapprochement between industry as an acquirer and universities as technology providers is a relatively new and therefore incipient phenomenon (Becerra, 2019; Calderón et al., 2016; Frías, 2019). Although several Mexican universities stand out nationally and internationally, it is not a phenomenon that is replicated in the majority of universities in the country (Pérez Cruz, 2019).

The literature points to shortcomings and weaknesses in the processes inherent to research management as the reasons why the transfer of technologies produced in Higher Education Institutions (HEIs) to the markets does not take off (Agramon & Lechuga, 2019; Alpizar et al., 2017; Álvarez et al., 2019; Benitez-Abarca & Rubio-Toledo, 2020; Bolívar-Cruz et al., 2017; Calderón-Martínez, 2014; García, 2017; Hernández et al, 2015; Jiménez & Castellanos, 2013; Martínez et al., 2018; Medellín Cabrera & Arellano Arellano, 2019; Meza & Delzo, 2017; Morales et al., 2014; Munari et al., 2017; Nuñez & Montalvo, 2015; Parakhina et al, 2017; Ponce Jaramillo & Güemes Castorena, 2016; Ramírez & Royero, 2019; Rocha & Romero, 2012; Solange & Silva, 2018; Soleimani et al., 2016; Solleiro & González, 2016; Soria et al., 2017; Velez et al., 2019; Yeverino & Álvarez, 2019; Sepúlveda, 2017).

It is of utmost importance to recognise that in order to achieve innovation, it is first necessary to go through research, which has undoubtedly been formally structured and organised in HEIs, although its management has not (Nguyen & Meek, 2016), therefore, it is important to focus on improving this function in order to make it efficient and improve its performance (Ramos et al., 2018).

Research management has not been a simple matter for universities at national and international level due to the academic community's deep-rooted focus on the fulfilment of research from a traditional point of view, which has not allowed them to generate a new system vision in university research and innovation processes (Pino et al., 2021).

In this respect, internal changes in management frameworks have been proposed to move HEIs from being "traditional" to "entrepreneurial" (Gür et al., 2017), 2017); however, this transition from research to innovation is not simple, it requires a strategy to develop it and make it happen, it requires a method, a "way", and that "way" includes planning actions, executing them, evaluating them and adjusting them in a systematic way (Garnica & Franco, 2020), this, without leaving out the establishment of rules and procedures to manage the life cycle of research projects (Nguyen & Meek, 2016).

This research work aimed to identify models and frameworks for university research management that have been developed since 2010 under two specific approaches.

To achieve this, in accordance with Torraco (2005), an integrative literature review was conducted among different authors who have made contributions to the theoretical body of the subject, using the search and evaluation methodology for inclusion of Xiao and Watson (2019).

This research is important because it will provide valuable information for those responsible for research areas in HEIs as it will show them a range of options that have been developed to guide this management process and allow them to decide whether to adopt or adapt them to their institutional research strategy.

The content of this document has been divided into four sections: the first section provides the context of research management; the second describes the methodology used for this research; the third shows the results obtained; and finally, the conclusions drawn from this research are drawn.

The context of scientific research management

Scientific research management has a significant influence on improving the level of research in universities (Yao, 2019). It is recognised as a systematic process that aims to strengthen and articulate research, development and innovation activities in different contexts, as well as foster cooperation between researchers, research groups and institutional networks (Ramos et al., 2018). This is achieved through the determination of an organisation's priorities in terms of scientific and technological needs, providing the necessary guidelines to develop research projects, proposing the appropriate means to expand the knowledge market in order to generate greater resources and strengthen alliances between the State-Business-University-Society that contribute to the development of the scientific, business and social community (Becerra et al., 2015).

The need for research management arises from at least three interconnected issues (Schuetzenmeister, 2010):

1. An increasing number of research organisations compete for scarce resources provided by governments or the private sector.

2. The complexity of many scientific problems requires interdisciplinary or transdisciplinary collaborations within or between research institutes and often non-scientific organisations.

3. Many fields rely on expensive infrastructure, facilities and instrumentation, such as particle accelerators, genome sequencers, aircraft, supercomputers or even satellites that require government support as well as collaboration between organisations.

Nguyen & Meek (2016), identify ten generic parameters for organising and structuring research management in universities in order to develop research capacity and improve research outputs, but also in the hope of ensuring that all organisational elements point in that direction. They are shown in Table 1. They also state, that five are more visible, and that the less visible tasks refer to the so-called "formalisation of behaviour" which is the design parameter by which the work processes of the research-oriented organisation are standardised.

	Tasks
More visible	Create research posts.
	Create research management positions.
	Decide on the main organisational units for research delivery.
	Create a research office.
	Create research oversight committees.
Less visible	Develop rules for research integrity.
	Develop rules and procedures for managing the life cycle of a research project.
	Develop a mechanism for assessing the quality of research results.
	Prepare researchers and research managers for the necessary skills and knowledge.
	Decide on vertical and horizontal decentralisation.

Table 1 Generic tasks for organising and structuring Research Management in universities
Source: (Nguyen & Meek, 2016)

Research management can be viewed through four approaches:

1. 1One aimed at the management of national Research and Development systems.

2. A level of funding organisations.

3. The management of research organisations, e.g., universities or research centres.

4. Project management in research groups, centres or departments where decisions are made with reference to the social environment of research as well as the cognitive dynamics of a scientific field. Working conditions, opportunity structure and constraints are shaped at this level (Schuetzenmeister, 2010).

The Research Management approach to the administration of research organisations arises because university administrations have tended to promote managerial control similar to commercial organisations, i.e. they have had to establish formalised control and evaluation routines to improve productivity and increase the accountability of researchers for the use of resources and the outcome of research activities. On the other hand, project management in research groups, research centres and the department represents how research work is carried out, on the basis of which decisions are made related to the social environment of research as well as to the cognitive dynamics of a scientific field (Schuetzenmeister, 2010).

Methodology

For this research, according to Torraco (2005), an integrative literature review was conducted among different authors who have made contributions to the theoretical body of the topic, using the search and evaluation methodology for inclusion of (Xiao & Watson, 2019).

Based on the search criteria, 187 articles were initially identified. The inclusion and exclusion criteria used was to identify studies referring to conceptual frameworks, models, methodologies or approaches related to research and innovation management in universities, also referred to in the literature as Higher Education Institutions.

First, duplicates were removed (N=30) and articles were excluded because they were not relevant, were reviews, were not in English or Spanish, or the full text was not found (N=51). The abstracts of 106 articles were reviewed to ensure that the focus sought was correct. Forty-nine were excluded and 57 were selected based on the inclusion criteria.

In the next stage, the 57 studies were classified according to the four approaches outlined by Schuetzenmeister (2010) mentioned above. Given that this research is oriented towards two of them, specifically: approach 3, which refers to the administration of research organisations, and approach 4, which relates to project management in research groups, centres or departments, only 11 were finally chosen.

Subsequently, a grounded theory research design was used, the main feature of which is that the data is categorised with open coding, and then the resulting categories representing the emerging theory are organised (Hernández et al., 2014).

Results

Under the research organisation management approach, 5 models and frameworks were found and are briefly described below.

a. Viable university research framework.

This model suggests the need for a more holistic approach to research management and its maintenance from a systemic and self-sustaining approach through the use of the Viable System Model (VSM). The concept of cohesion in VSM addresses the need for coherence between its functions, coherence between the higher level system and its subsystems, as well as between its subsystems. These cohesive relationships match the operations of the whole system with the requirements of its internal and external situations to ensure the viability of the system. This model is intended to help university leaders and administrators understand the interrelationship of functions within the university to develop functions derived from the third mission (Adham et al., 2015). This model is shown in Figure 1.
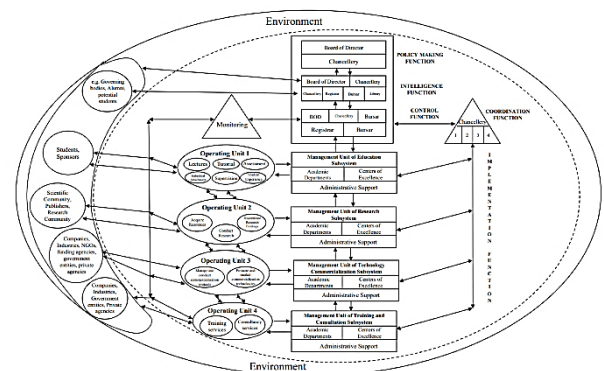

Figure 1 Viable university research framework
Source: Adapted from (Adham et al., 2015)

b. Innovation and performance management framework for university research

The framework is based on a concept in which innovation management contextual factors have a direct effect on innovation performance. The conceptual framework of innovation management contextual factors consists of 17 attributes that are grouped into 5 innovation management success factors as independent variables: a) innovation strategy; b) leadership; c) organisational structure; d) organisational culture; e) innovation resources.

Meanwhile, the dependent variables in the conceptual framework focus on innovation performance in terms of: a) efficiency and effectiveness of the innovation process; b) number of new projects, services or products completed, c) amount of research fund awarded; d) number of external linkages; e) duration to complete a research project (Kowang et al., 2015). The framework is shown in Figure 2.
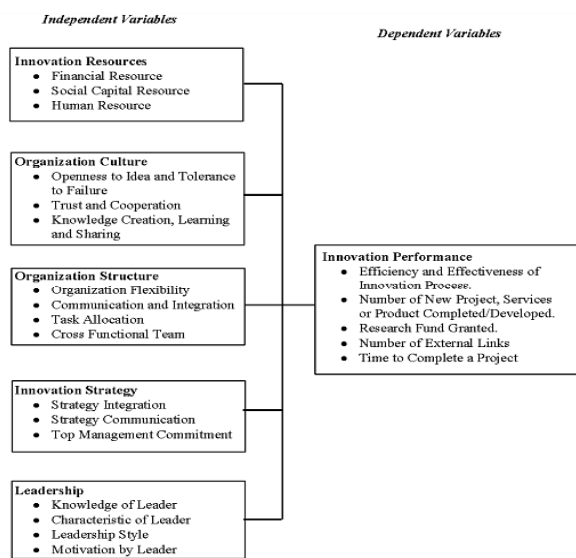
Figure 2 Innovation and performance management framework for university research
Source: Adapted from (Kowang et al., 2015)

c. Framework for structuring interdisciplinary research management.

With project-based research becoming an important form of research organisation, its coordination and management has become an important task in interdisciplinary research collaborations and a key determinant of their success.

This framework is based on three types of analysis that form the methodological basis for its development: 1) content analysis of working documents and contracts; 2) team-reflected experience and documented action analysis; and 3) literature review on interdisciplinary and transdisciplinary management and organisational management. Furthermore, through a case study of a European Integrated Project, the authors developed four essential management domains and related them to the existing literature on inter- and transdisciplinary research project management. The resulting model includes 4 quadrants referring to interdisciplinary culture, integrative product development. Open systems and internal processes (König et al., 2013). This framework is shown in figure 3.

Figure 3 Framework for interdisciplinary research management
Source: Adapted from (König et al., 2013)

d. University business research framework

For the development of the framework a constructionist grounded theory was used to collect multiple but highly focused data to identify and develop the concepts shown in Figure 4.

Figure 4 University business research framework
Source: Adapted from (Naderibeni & Radovic, 2020).

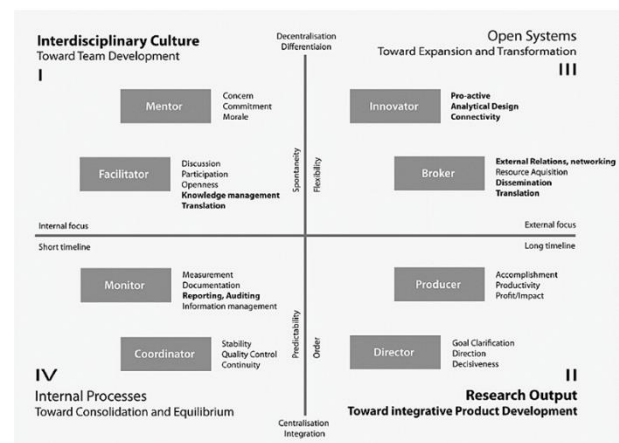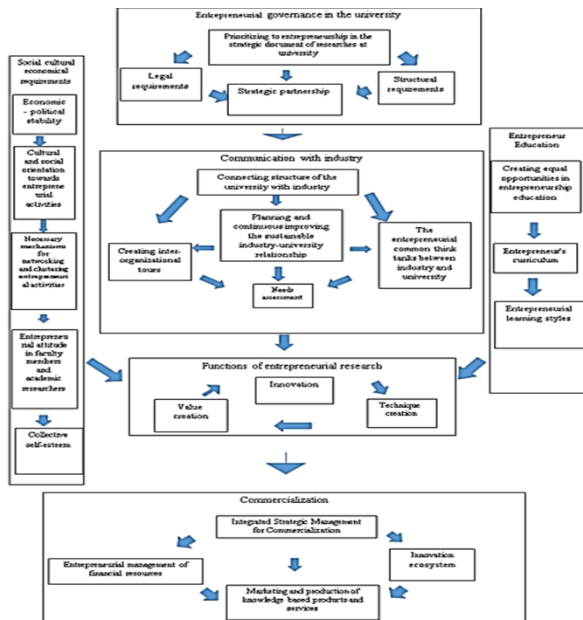The model concentrates on 6 substantial categories that operate within the organisation under a systemic approach: 1) entrepreneurial governance in the university; 2) communication with industry; 3) entrepreneurial research functions; 4) social, cultural and economic requirements that drive entrepreneurial research; 5) entrepreneurial education as an organisational culture and, 6) commercialisation (Naderibeni & Radovic, 2020).

d. Institutional model of an entrepreneurial university

The model shows that top-level management is the driving power that plays a dominant role in determining the direction of the university to become entrepreneurial. Top management is generally able to shape organisational strategies in terms of facilitating, initiating and implementing, so their commitment is required when executing a management system that drives research quality. The elements used to form the institutional model are actors who play a role in fostering entrepreneurial universities. After a selection and validation process, the authors identify 7 that are fundamental: 1) top-level management; 2) faculty and staff, 3) students, 4) alumni, 5) parents, 6) local government, 7) regulator, 8) industry, 9) community, 10) research institute and; 11) media, which they integrate into a hierarchical model through which they map the positions and roles of each of them in the entrepreneurial ecosystem. This model is shown in Figure 5 (Novela et al., 2021)
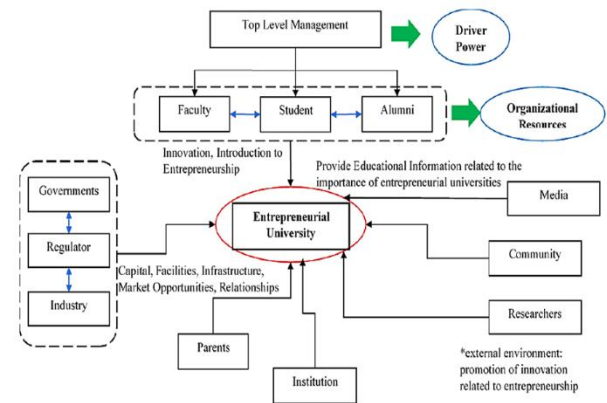
Figure 5 Institutional model of an entrepreneurial university
Source: Adapted from (Novela et al., 2021)

On the other hand, under the approach of management oriented to research groups, centres and departments, 6 models and frameworks were found, which are described as follows.

d. Action Research and Innovation Management Framework (AIM-R).

Action research is a practice-oriented research method applied in collaboration with practitioners, which focuses simultaneously on solving practical problems and expanding scientific knowledge. It therefore helps to generate rigorous and relevant research knowledge.

This model is based on the Design Research Methodology which is action-oriented in a high-level iterative process of four phases: 1) clarification of vision; 2) articulation of theories; 3) implementation of actions and data collection; and, 4) reflection and informed action planning. Design Research Methodology focuses on improving product development at various levels, from single design methods through processes to broader organisational changes, including smaller changes in techniques and methods.

The AIM-R model, shown in Figure 6, provides a structured research process for systematically applying action research as a way of fostering rigorous research processes while stimulating relevant practical outcomes. AIM-R specifically considers different levels of change (individual, team, organisational) and objects, e.g. outcome, process or capability, all critical to the multifaceted character of innovation management.
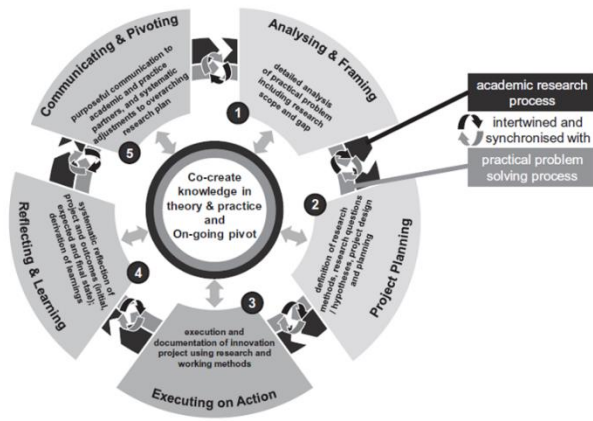
Figure 6 Action research and innovation management (AIM-R) framework
Source: Adapted from (Guertler et al., 2020).

The model includes five circular phases: 1) analysis and elaboration; 2) project planning; 3) action implementation; 4) reflection and learning; and 5) communication and pivoting. It is worth mentioning that it has already been tested in a project that took two years to develop. This project focused on open innovation management with three industrial partners and was funded by a German industrial cluster agency (Guertler et al., 2020).

e. Reference model for academic research management based on PMBOK.

In the research process there is a need for a project management system that meets the requirements of adaptability and flexibility, as well as efficiency in resource allocation for successful management. Project Management Book Of Knowledge (PMBOK) issued by PMI (Project Management Institute) is widely used in successful project management and several studies show that with the use of PMBOK, good practices in software project management help organisations to achieve their goals.

This model aligns the project life cycle with the PMBOK phases, dividing it into five phases: initiation, planning, execution, monitoring and control, and closure.

The model is shown in figure 7.
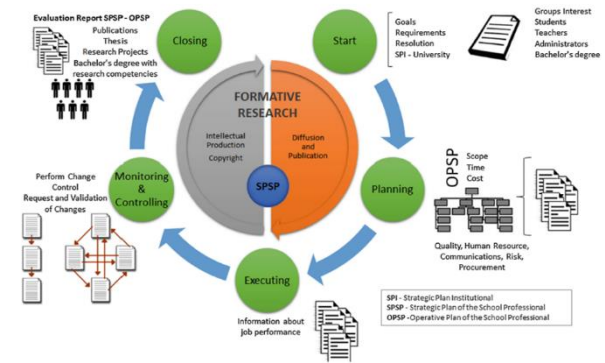
Figure 7 Reference model for academic research management based on PMBOK
Source: (Bayona et al., 2018)

It is important to mention that the model was adapted for each area of knowledge by reducing in some cases the processes and activities, as well as establishing the processes involved in each of them. It is also worth mentioning that this model has already been implemented to manage research management projects in two universities in Peru and that the results obtained corroborate its efficiency in meeting stakeholder expectations (Bayona et al., 2018).

f. Technology and Innovation Management Model for Higher Education Institutions.

This model attempts to solve the common bottlenecks in the innovation and development process known as the "European Paradox" or the "Latin American Innovation Gap" also known as the "valley of death"; it is also intended to be the solution to the innovation gap regarding the learning model for effective practices and design tools in technology and innovation management. Conceptually, the model focuses on competencies, tools, skills and behaviours.

It arises from a case study analysis from Europe and Latin America to which they also added as complementary sources, cases from the literature and their own experiences. From this, they derived a learning model based on the organisational framework.

The model includes the following knowledge areas: (a) research information skills; (b) knowledge of technological trends; (c) knowledge about financial markets and new schemes (e.g. crowdfunding); (d) knowledge about market requirements and skills to identify potential customers; (e) knowledge and skills related to managing innovation processes and projects; f) skills to make decisions under conditions of risk and uncertainty; g) skills to stimulate entrepreneurship in many different organisational situations; h) ability to interact with many different actors to innovate; i) knowledge and information of environmental regulations; j) new approaches to product design in the framework of the circular economy. Figure 8 shows the model, which in the outer circle shows the basic conditions or contexts needed to manage or implement successful technology and innovation management. Some of these are external to the organisation, some internal, such as systems thinking, and some both internal and external, e.g. complexity, uncertainty and risk. The inner circle includes the specific tools and competences for technology and innovation management (Arciénaga et al., 2018).

Figure 8 Technology and Innovation Management Model for Higher Education Institutions
Source: Adapted from (Arciénaga et al., 2018)

g. The business model of the Cambridge innovation process

The Cambridge Business Model Innovation Process (CBMIP) framework addresses the different stages of an organisation's business model generation, from initial conceptualisation to implementation. It aims to provide better guidance through the business model innovation process with its different phases and activities and to map the potential challenges of the gap between design and implementation for companies.

The model shown in Figure 9 consists of eight sequential but iterative phases or steps: 1) Ideation: in this phase the purpose of the business model innovation and the key stakeholders are defined; both the value proposition and the first conceptual ideas are devised; 2) Conceptual design: a first rough conceptualisation of the key elements of the business model is developed and documented; 3) Virtual prototyping: a variety of prototypes are generated and reviewed to refine and communicate the business model concept; 4) Experimentation: key assumptions and concept variables are tested in simulations and field experiments, ideally through randomised controlled trials; 5) Detailed design: An in-depth and detailed analysis of all elements of the business model and the interactions between these elements is performed; 6) Pilot testing: the entire concept is tested by running a first limited version of the business model in a subsection of the target market; 7) Launch: the business model is implemented in all responsible organisational units and in the target market; 8) Adjustment and diversification: the business model is reviewed according to the initial plans, expectations and strategic fit, based on this assessment adjustments are made depending on the changes needed. Based on this assessment, adjustments are made depending on the necessary changes. Based on this assessment, the entire business model innovation process can be repeated (Geissdoerfer et al., 2017).

Figure 9 The business model of the Cambridge innovation process
Source: Adapted from (Geissdoerfer et al., 2017)

h. **Translational research and development framework for linking university research in science and engineering with commercial outcomes**

Over the past few decades, translational research has emerged as a new means of trying to speed up the time it takes to turn basic scientific discoveries into practical applications. The concept started in the medical industry, but its use has been migrating to other areas of knowledge. Through this translational research and development (R&D) framework, the aim is to create a smoother transition from research to business (R2B).

The translational R&D methodology proposed in this model incorporates best practices from two interrelated fields of expertise: project management (PM) and new product development (NPD). PM is the use of management skills, tools and processes to successfully carry out a project, while NPD is the overall process of strategy, organisation, concept generation, product creation, marketing plans, evaluation and commercialisation of new or improved products.

The NPD framework in the translational R&D methodology proposed in this model is a variant recommended in the New Product Development Manual (PDMA®), i.e. the Stage-Gate® model by Cooper, (2013) which is a business process and risk model that creates value through the rapid and cost-effective transformation of good ideas into successful new products.

As shown in Figure 10, the model comprises four phases: initiation, planning, execution and closure.
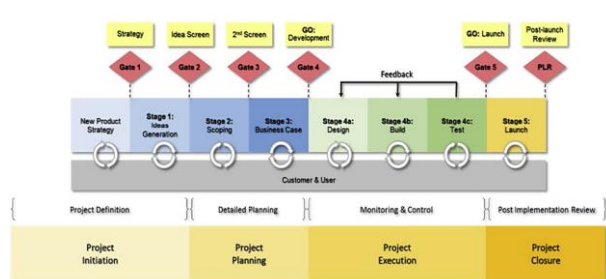

Figure 10 Project life cycle diagram representing the four project phases and the five-stage Stage-Gate® system
Source: Adapted from (Bazan, 2019)

Critical success factors such as front-loading, sharp product definition, spiral development and voice of the customer approach are intrinsically integrated into the model that seeks to help researchers initiate, plan, execute and close a university-based translational R&D project with the intention of bringing products to market (Bazan, 2019).

i. **Proposed model for University-Industry Technology Transfer (UITT) in India.**

This model was designed based on a comparative study of technology transfer policies and models practiced in some universities in the US, Japan and Israel and then analysing current practices in India. The model is based on empirical evidence concerning policies and models implemented in the aforementioned countries. The criteria for choosing these nations was based on the diversity of geographic locations and proven success stories in technology commercialisation by universities.

Information was obtained from published literature sources, country reports and government websites. Public information was also obtained from the World Intellectual Property Organisation (WIPO) relating to public universities in the US, Japan, and Israel. Subsequently, we qualitatively compared: 1) the innovation and technology transfer policies; 2) the strategies undertaken at a leading university in the countries on university research; and, 3) the organisation of the technology transfer office for the successful commercialisation of university research.

The resulting model shown in Figure 11 includes four stages: 1) research results; 2) technology assessment; 3) market assessment; 4) commercial viability. If the new technology meets all the above criteria, it can be licensed if the patent is granted or can be transferred to the potential licensee according to agreed terms (Ravi & Janodia, 2022).
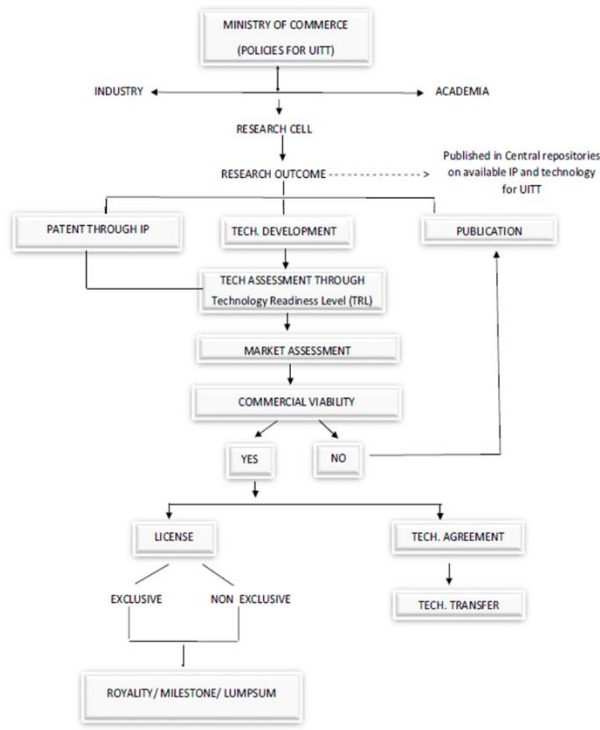
Figure 11 Proposed model for University-Industry Technology Transfer in India
Source: Adapted from (Ravi & Janodia, 2022)

Once the models found had been presented in a very general way, various analyses were carried out, which are presented below. Table 2 summarises the analysis carried out on the elements that make up each of the models and frameworks for research management that refer to the administration of research organisations.

Framework	General elements
A viable university research framework *(Adham et al., 2015).*	1. Policy-making function.
	2. Intelligence function.
	3. Control function.
	4. Coordination function.
	5. Implementation Subsystem.
Innovation and performance management framework for university research *(Kowang et al., 2015).*	1. Innovation strategy.
	2. Innovation leadership.
	3. Organisational structure.
	4. Organisational culture.
	5. Innovation resources.
Framework for structuring interdisciplinary research management *(König et al., 2013).*	1. Internal communication management and collaboration.
	2. Integrative development of trans- and interdisciplinary research products.
	3. Managing the external environment, the interface between science and policy.
	4. Internal organisation and administration of a project.

Framework	General elements
University business research framework *(Naderibeni & Radovic, 2020).*	1. Corporate governance at the university.
	2. Communication with industry
	3. Entrepreneurial research functions.
	4. Consider the social, cultural and economic requirements that will drive the university towards entrepreneurial research. .
	5. Integrating entrepreneurial education as an organisational culture.
	6. Marketing.
Institutional model of an entrepreneurial university *(Novela et al., 2021).*	1. First level management.
	2. Faculty and staff.
	3. Student.
	4. Alumni.
	5. Parents .
	6. Local government
	7. Regulator
	8. Industry
	9. Community
	10. Researchers
	11. Media

Table 2 Constituent elements of Models and Frameworks for research management that refer to the administration of research organisations
Source: own elaboration based on the cited authors

Similarly, table 3 summarises the analysis of the constituent elements of the models and frameworks developed for research management with respect to project management in research groups, centres or departments.

Framework	Stages	Elements, sub-elements, attributes and/or functions
Framework for Action Research and Innovation Management (AIM-R) *(Guertler et al., 2020).*	Analysing and framing	Detailed analysis of practical problems, including research scopes and research gaps .
	Project planning	Defining research methods and questions, hypotheses, project design and planning .
	Implementation of the action	Execution and documentation of the innovation project using working and research methods .
	Reflection and learning	Systematic reflection of the project and its results (initial, expected and final states), lessons learnt.
	Communication and pivot	Useful communication to academic and practice partners and systematic adjustments to the overall research plan. .
	Home	Objectives, requirements, resolution, Institutional strategic plan, administrative, faculty and student stakeholders, academic degrees.
	Planning	Scope, time, cost, quality, human resources, human resources, communications, risk, procurement.
Reference model for academic research management based on PMBOK (Bayona et al., 2018).	Execution	Information on work performance.
	Monitoring and control	Perform change control, request and validation of changes.
	Closing	Evaluation reports, publications and theses, research projects, academic degrees with research competences.
Technology and Innovation	Systems thinking	• Talent and creativity management.
	Globalisation dynamics	

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Framework	Stages	Elements, sub-elements, attributes and/or functions
Management Model for Higher Education Institutions *(Arciénaga et al., 2018).*	Complexity	• Entrepreneurship management, forecasting, foresight and vigilance.
	Uncertainty	• Management of venture capital and financing.
	Risk	• Network and information technology management
		• Product, process, service and organisational innovation.
		• Strategic management
		• Problem solving
		• Project management
		• Technology transfer
		• Research and development management
		• IP protection and exploitation
		• Circular economy and responsible and sustainable innovation
Translational research and development framework for linking university research in science and engineering to commercial outcomes *(Bazan (2019).*	start of the project-definition	• - New product strategy
	Detailed project planning	• - Idea generation
	Project implementation (Monitoring and control)	• Design • Construction • Testing • Continuous feedback
	Project closure	• Design • Construction • Testing • Continuous feedback
The business model of the Cambridge innovation process *(Geissdoerfer et al., 2017).*	Ideation	• Vision formulation • Identify stakeholders • Sustainable value analysis • Evaluation and selection of ideas
	Conceptual design	• Integration of ideas. • Discussion on technological and general trends. • Definition of the system of value creation, delivery, capture/elements of business management / dimensions of business management.
	Virtual prototypes	• Benchmarking within the industry. • Comparison with generic BM concepts. • Prototype construction. • Evaluation and selection of prototypes.
	Experimentation	• Identification of key variables. • Design of the experiment. • Running experiment • Analysis and lessons learned
	Design of details	• Detailed definition of all elements • Summary of each element. • Business transformation tool
	Piloting	• Planning. • Implementation. • Analysis • Adjustments • Documentation and communication • Identification of failure modes
	Launch	• Implementation planning. • Implementation • Expansion
	Adjustment and diversification	• Supervision • Reflection • Adjustment • Scaling up • Diversification • Iteration of the business model innovation process
Proposed University-Industry Technology Transfer (UITT) model in India	Ministry of Trade	• Policy areas.
	Research Cell	• Academia • Industry (IP) - Value of technologies.
	Research results	• Publication in central IP repositories only for the university.
	Technological Development	• Publications • Patents through Intellectual Property.

Framework	Stages	Elements, sub-elements, attributes and/or functions
(Ravi & Janodia, 2022).	Technology assessment	• TRL
	Commercial viability	• Economic valuation • Licensing • Income from technology transfer

Table 3 Constituent elements of the Models and Frameworks for research management that refer to project management in research groups, centres or departments
Source: own elaboration based on the authors cited above

Conclusions

Describing and analysing the models developed for research management under two of the approaches identified by Schuetzenmeister (2010) has led to the following conclusions:

a. Through this research it has been possible to corroborate what Pino et al. (2021) mentioned, regarding the fact that management models for research and innovation in HEIs at an international level are still under construction, since few examples can be found in the literature on the implementation of this type of models in HEIs. In this research only 11 studies could be found under the selected approaches.

b. As can be seen from the analysis conducted, the models under the approaches referred to adhere to what is mentioned by Nguyen & Meek, (2016), regarding some of the tasks of research management being more visible than others.

c. This has also confirmed that research management should be approached from various perspectives (Schuetzenmeister, 2010), in order to cover each of the levels involved in the process, i.e. from the macro to the micro level, in order to create the necessary conditions according to each context, and to promote the research process and its subsequent transfer.

d. The authors of the models reviewed under the research organisation management approach agree that structuring the activities surrounding the research process from a systemic perspective would improve research results, but that the key factor for success is undoubtedly management and promotion from the highest level of the organisation.

e.   On the other hand, the models and frameworks developed under a project management approach in research groups, centres or departments refer to integrated activities in knowledge areas such as technology management, project management, technology assessment and its corresponding valorisation, all of which represent the "forms" mentioned by Garnica & Franco (2020), to manage to drive research towards transfer.

f.   Derived from the above, it can also be affirmed that in order to move from a "traditional" university to an "entrepreneurial" one, it is necessary to make substantial changes in the processes involved in research, since otherwise the results will simply not be different.

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Article

SDG 4: towards an inclusive education from international guidelines and public policies in Mexico

El ODS 4: hacia una educación inclusiva desde lineamientos internacionales y las políticas públicas en México

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Abstract

Inclusive education, as part of Sustainable Development Goal 4, is a topic of great importance and topicality, especially in these times that we are living, still a pandemic and great uncertainty. The reason for the project from which this article is derived arose from the need to address this highly relevant problem and contribute, in some way, to greater educational inclusion. In this work, the preliminary results of an investigation oriented to educational reforms and policies in Mexico will be reported, to address the question of how educational policies in Mexico contribute to the achievement of an inclusive education, in correspondence with international guidelines. For the development of this project, documentary research, classical methods such as analysis-synthesis and political discourse analysis were used; all of this, with the aim of reflecting on inclusive education, as part of the SDG 4 approach, dedicated to quality education, based on international guidelines and on the educational policies that have been generated in the country. Likewise, and by way of conclusions, some requirements are presented to combat exclusion and achieve a truly inclusive education. Some ways of improvement are also raised, and it is emphasized that, in order to achieve the proposed objectives, everyone's participation is necessary.

Inclusive Education, SDG 4, Educational policies

Resumen

La educación inclusiva, como parte del Objetivo de Desarrollo Sostenible 4, constituye un tema de gran trascendencia y actualidad, sobre todo, en estos tiempos que estamos viviendo, aún de pandemia y de gran incertidumbre. La razón del proyecto del que se deriva este artículo surgió de la necesidad de atender a esta problemática tan relevante y contribuir, de alguna manera, a una mayor inclusión educativa. En este trabajo se dará cuenta de los resultados preliminares de una investigación orientada a las reformas y políticas educativas en México, a fin de atender al cuestionamiento de cómo contribuyen las políticas educativas en México al logro de una educación inclusiva, en correspondencia con lineamientos internacionales. Para el desarrollo de este proyecto se utilizó la investigación documental, métodos clásicos como el análisis-síntesis y el análisis político del discurso; todo ello, con el objetivo de reflexionar sobre la educación inclusiva, como parte del planteamiento del ODS 4, dedicado a una educación de calidad, con fundamento en lineamientos internacionales y en las políticas educativas que se han generado en el país. Asimismo, y a modo de conclusiones, se presentan algunos requerimientos para combatir la exclusión y alcanzar una verdadera educación inclusiva. También se plantean algunas vías de mejora y se enfatiza que, para lograr los objetivos propuestos, es necesaria la participación de todos.

Educación inclusiva, ODS 4, Políticas educativas

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Introduction

In Mexico, the discussion about the right to education, although not recent, has revolved around constitutional reforms, and the legal foundations of education based on positive law. and the legal foundations of education based on positive law, related areas of knowledge and the historical perspective.

María Mercedes Ruiz Muñoz and Universidad Iberoamericana

The Sustainable Development Goals (SDGs) are an issue of great global and national importance. They were adopted in 2015 by the United Nations (UN) as a universal call to combat the great evils that affect the world: poverty, hunger, inequality, health problems, water, the economy; the search for sustainable cities and communities, peace and justice, to be achieved by 2030.

For this reason, in 2022, ECORFAN has launched a call to analyse the SDG Goals and, from this perspective, this article is dedicated to a review of SDG 4: Quality Education, at the halfway point, an analysis that we consider very relevant at this time of pandemic, of great uncertainty, and of very diverse problems of an international nature.

The SDG in question aims to: "ensure inclusive and equitable quality education and promote learning opportunities for all" (UN, 2015). The Goal also states, among other things, that: "In achieving quality, the 2030 Agenda is based on a transformative and holistic, rights-based approach, reflecting a perspective centred on equity and inclusion".

Thus, considering the complexity and breadth of the topic, the purpose of this article is to provide a preliminary analysis of approaches to inclusive education based on international guidelines and public policies that have been generated in the country. This work derives from a broader research project devoted to the study of educational reforms and policies in Mexico, especially aspects related to inclusion, quality of education and gender equality issues.

In terms of methodology, the paradigm used is interpretative, with a qualitative approach and the inclusion of various strategies such as documentary research, methods such as analysis and synthesis, as well as the perspective of political discourse analysis, all of which will be presented in the following section.

Finally, and by way of conclusions, a brief reflection is presented on the concepts analysed in relation to inclusive education and its foundations in international guidelines and educational policies in Mexico. The biggest problem that human realities have posed to science is that it derives from its very nature.

Miguel Martínez Miguélez

Methodology

For the development of the research project that gave rise to this work, various research methods were used, from a qualitative approach, in general, conceived from a holistic perspective, which places the emphasis on people and the particular contexts in which they develop, seeking a global understanding, as a whole and not separately because "what is expected in the end is a smooth description, an experiential understanding and multiple realities" (Álvarez-Gayou, 2006, p.29). This is based on the flexibility offered by educational research, the richness and the joint learning with the participants. In this case, the question that has guided the present work is: How do educational policies in Mexico contribute to the achievement of inclusive education, in accordance with international guidelines?

The main method employed in the first stage of the project, which is the one that will be reported in this article, was desk research, which "consists primarily of the selective presentation of what experts have already said or written on a given topic. In addition, it can present the possible connection of ideas between various authors and the researcher's ideas" (Montemayor, García and Garza, 2002, p. 12). It is a construction of knowledge from the sources, as "a way of looking after the tradition of original thought, and bringing it to the present with a hermeneutic reading that favours discussion by making new contributions to scientific development" (Gómez, 2011, p. 230).

Although there is still controversy about the scientificity of documentary research as a method for contributing to knowledge, it is undeniable that, in recent times, it has become very important to return to the original sources or proposals (especially in the social sciences), in a dialogue with the authors, so that this search allows "reality itself to express itself, with logic and arguments, thus building new knowledge" (Gómez, 2011, p. 229).

Due to the breadth and complexity of the topic in question, the search for documents was oriented, on the one hand, towards international guidelines linked to education, particularly at the higher education level and, more specifically, to Sustainable Development Goal 4 (SDG 4), educational inclusion and inclusive quality education. On the other hand, documents and research on public policies in Mexico were sought, taking as a starting point Article 3 of the Political Constitution of the United Mexican States (CPEUM), the derived laws and what is related to inclusion/exclusion, in its broadest sense.

For the project in general, in addition to classical methods such as analysis and synthesis, the perspective of political discourse analysis was used, which does not only encompass language, written or spoken, but all actions that carry meaning, which causes the discursive to be juxtaposed purely and simply with the social (Laclau, 1985). This perspective, developed by Ernesto Laclau, offers us a dialogue and confluence of different sciences: social, language and political science. In a second phase, this analysis will allow us to methodologically deepen these concepts, which are so necessary for a better understanding of the subject.

Inclusive education: some conceptual references

> Educational action is natural and inherent to every human person and therefore education has as its purpose: the adaptation of the human being to cultural needs.
>
> María Teresa Hernández, 2018

Throughout history, education has played a preponderant role in the social life of peoples. It has been considered a fundamental factor for the economic and social development of countries, as Juan Carlos Tedesco confirms when he states: "it is the only variable that simultaneously affects social equity, economic competitiveness and citizen performance" (2007, p. 91).

According to the Report to UNESCO of the International Commission on Education for the 21st century, chaired by Jacques Delors, education is conceived as "a factor of cohesion if it seeks to take into account the diversity of individuals and human groups and, at the same time, avoids being a factor of social exclusion" (1997, p. 54). And, in the same document, known as Learning: The Treasure Within, it is stated that "in order to restore education to its central place in the social dynamic, its role as a melting pot must first be safeguarded by combating all forms of exclusion" (1997, p. 56). As has been repeated on many occasions, exclusion is inextricably linked to inclusion, as two sides of the same coin, one manifests itself because the other exists; and it is a very complex and multifactorial phenomenon.

In this sense, exclusion is generally understood as leaving out a certain group or individual, preventing them from getting involved or participating in a community. And many authors define it as not giving poor, disadvantaged and vulnerable children access to mainstream schools. Likewise, we may all be aware of situations where members of a school have been excluded, or we ourselves have had exclusionary attitudes towards certain people. However, for the purposes of this paper, exclusion will be taken to mean the failure to ensure the entry, retention and participation of all students in the life of the school community, at any level of education.

In education, exclusion is a phenomenon "linked to the recognition, not only tacit or legal but also experiential, of the differences present in the actors of the education system and, above all, of the great diversity of traits that can be the cause of singling out, animosity, segregation, discrimination and, therefore, exclusion, for example: gender, age, disability, race, culture, language, religion, social stratum, marital status, physical appearance, sexual or ideological orientation" (Martí, 2016, p. 60).

In the case of education systems, it is important to prevent and be aware that they do not lead to situations of exclusion because: "competition" (in its meaning of competition), a misunderstood practice of selection according to school achievement, can lead to situations of school failure, backwardness, marginalisation, "dropout" and exclusions (Delors, 1997), which widens the gaps and differences in opportunities for all.

The evolution of concepts linked to exclusion and educational inclusion has also been considered, leading to inclusive education. Some stages in this evolution are those starting from segregation: the different outside the "normal", but together. It goes through integration in which different people are apparently integrated, but are still separated. In exclusion, they are no longer segregated, but all those who have some characteristic that differentiates them from the others remain outside. Inclusion aims to integrate everyone as part of a community. And finally, inclusive education goes further, and is part of a comprehensive response that aims not only to guarantee access to all, but also to train people with a sense of democracy, to develop a critical and cooperative spirit.

Educational and social inclusion is a highly relevant issue at national and international level. It is present in the guidelines and normative documents that govern education and social coexistence. In the particular case of Mexico, in the latest reform to Article 3 of the Political Constitution of the United Mexican States (CPEUM), on 15 May 2019, several emphases were made, including: combating manifestations of exclusion and discrimination, inclusive education and the importance of implementing a culture of respect for diversity.

UNESCO in 2005 published *Guidelines for inclusion: ensuring access to education for all*, in which it offers the following definition:

Inclusion is seen as a process of addressing and responding to the diversity of needs of all learners through increased participation in learning, cultures and communities, and reducing exclusion in and out of education. It involves changes and modifications in content, approaches, structures and strategies, with a common vision that embraces all children of the appropriate age range and the conviction that it is the responsibility of the regular system to educate all children (p. 13).

The same document states: "In defining inclusion it is important to highlight the following elements:".

Inclusion IS about:

- Welcoming diversity.

- Benefiting all learners, not just targeting the excluded.

- Catering not only for children who may feel excluded in school.

- Providing equal access to education or making certain provisions for certain categories of children without excluding them.

Inclusion IS NOT about:

- Special education reforms alone, without reforming the formal and non-formal education system.

- Responding only to diversity without also improving the quality of education for all learners.

- Special schools, but perhaps additional support for students within the regular school system.

- Meeting only the needs of children with disabilities.

- Meeting the needs of one child at the expense of another child (2005, p. 15).

There are four key elements that tend to figure strongly in the conceptualisation of inclusion (Unesco, 2005, pp. 15-16):

Inclusion is a process. It is about learning to live with difference and learning to learn from difference.

Inclusion is concerned with the identification and removal of barriers, and involves research in order to plan improvements in policy and practice.

Inclusion refers to the presence, participation and achievement of all learners.

Inclusion implies a particular emphasis on groups of learners who may be at risk of marginalisation, exclusion and underachievement.

From this perspective, the starting point should be that education is considered a human right, and access, coverage and equity are key to achieving inclusive education beyond greater educational inclusion. Inclusive education has been defined by UNESCO as "the right of everyone to receive an education that promotes lifelong learning", and that is of quality, conceived as one that "pays attention to marginalised and vulnerable groups and seeks to develop their potential" (UNESCO Santiago Office, website).

Proof of this importance is evident in the 2030 Agenda for Sustainable Development, whose Goal 4 refers to: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Hence it has been taken as an object of study for this work.

Results

International guidelines underpinning education policy on inclusion and exclusion

The theoretical framework of reference for inclusive guidance can be considered to be constituted, to a large extent, by a whole set of demands made by various international bodies - starting as early as 1948 with the Universal Declaration of Human Rights which began as early as 1948 with the Universal Declaration of Human Rights and continue today and which continue to this day.

María Luisa Dueñas Buey

There are many guidelines and normative documents, at all levels, which constitute references for countries in relation to how to approach and develop policies, programmes, proposals and practices regarding the right to education, with all its implications.

To understand the foundations of the policies that have been generated on education as a human right and, within this, the processes of inclusion, it is necessary to refer to fundamental instruments at the international level.

Among the documents we take as a starting point the Universal Declaration of Human Rights, issued by the United Nations (UN) in 1948, which proclaims that "everyone has the right to education [... and] shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms".

Significantly, at the national level, we could consider the Political Constitution of the United Mexican States (CPEUM) as advanced and innovative, recognising that in the second reform of Article 3 of the Constitution in 1946 (two years before the aforementioned Declaration), it is already stated that education "shall aim at the harmonious development of all the faculties of the human being"; Among the criteria that will guide this education, it is emphasised that it will fight against fanaticism and prejudice and, above all, it will support "the ideals of fraternity and equality of rights of all men, avoiding the privileges of races, sects, groups, sexes or individuals" (an issue that we will return to later, in relation to public policies in Mexico).

Recent international documents that should be considered as important references and that serve as a basis for national public policies, particularly in Mexico, include:

The Convention on the Rights of the Child (1989), the World Declaration on Education for All (1990), the Dakar Framework for Action (2000), Education 2030: Incheon Declaration (2015), and the UNESCO General Conference (2019). All these international guidelines (to which others can be added, before and after) are based on various postulates around education as a right (and, beyond that, as a human right); the fight against discrimination of all kinds and exclusions; peaceful coexistence and a culture of peace; educational inclusion and the paths towards inclusive education; and, in general, the sustainable development that the world requires to remain and transcend.

From the first of these documents mentioned (Convention on the Rights of the Child), it is worth highlighting Article 29 (1.d) which proposes: "To prepare the child for responsible life in a free society, in a spirit of understanding, peace, tolerance, equality of sexes and friendship among peoples, ethnic, national and religious groups and persons of indigenous origin".

Certainly, since the World Declaration on Education for All, the term "inclusion" has become more present in the educational context. It highlights the recognition that "adequate basic education is essential for strengthening higher levels of education and scientific and technological education and training, and thus for achieving self-determined development". It is also necessary to "develop supportive policies in the cultural, social and economic sectors [...] for the betterment of the individual and society".

As for the Dakar Framework for Action. Education for All, it endorses the commitments made earlier, including:

> 8.ii Promote education for all policies within the framework of a sustainable and well-integrated sectoral activity [...]. It also reiterates that "education is a fundamental human right, and as such is a key element of sustainable development and of peace and stability in each country and among nations".

Before continuing with the following selected document, it is pertinent to recall that in September 2015, the United Nations met to adopt a new agenda that included 17 Sustainable Development Goals (SDGs), focused on eliminating the main ills afflicting the world today (poverty, hunger, inequalities), as well as protecting the planet from problems with water, energy, climate change, underwater life, the life of terrestrial ecosystems, and achieving peace and justice; all this, considering the necessary partnerships to achieve these goals.

SDG 4, oriented towards "quality education", is an obligatory reference point for the planning of education policies that are also linked to other goals, recognising that "education enables upward socio-economic mobility and is key to escaping poverty".

A milestone in this issue addressed was the Education 2030: Incheon Declaration and Framework for Action for the realisation of Sustainable Development Goal 4: "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all", a document arising from the 2015 World Education Forum in Incheon, Republic of Korea, which recognises that "inclusion and equity in and through education are the cornerstone of a transformative education agenda," and sets out a commitment to "make the necessary changes in education policies and to focus our efforts on the most disadvantaged, especially those with disabilities, to ensure that no one is left behind" (p. 7).

A highly relevant aspect of this Declaration, recognised by the signatories, is that "the success of the 2030 education agenda requires adequate policies and planning, as well as efficient implementation modalities" (p. 9); and it is necessary to highlight this as it is one of the problems that, at least in Mexico, is very often present: policies are well formulated and supported, but they are not adequately implemented and their implementation is not properly monitored.

While reaffirming the vision and political will reflected in many international and regional human rights treaties establishing the right to education, there is also an awareness that, despite the efforts made, it is with great concern that we are far from having achieved education for all.

The vision of this Declaration is "to transform lives through education, recognising the important role of education as a key driver of development and for the achievement of the other proposed SDGs. We commit ourselves as a matter of urgency to a single, renewed education agenda that is comprehensive, ambitious and demanding, leaving no one behind", a phrase mentioned above and echoed in official discourse in Mexico.

During the UNESCO General Conference in Paris (November 2019), more than 100 ministers of education and university leaders met to plan international measures to improve inclusion and mobility in higher education, all of which reaffirms the importance of the subject of this work at the international level.

On the other hand, the 40th session of UNESCO's General Conference (12-27 November 2019) adopted a new global framework for Education for Sustainable Development (ESD 2030) that is (supposed to) be implemented in the decade 2020-2030. The framework will focus on the integration of ESD and the 17 SDGs into policies, learning environments, teacher capacity-building efforts, youth empowerment and mobilisation, and local level work.

Finally, at the international level, some approaches emerging from recent meetings at this level are worth mentioning:

- UNESCO experts met (2021) to discuss the policy paper on the impact of COVID-19 on higher education.

- Equity and access in higher education require greater attention from universities and policy makers.

- The aim of the UNESCO World Conference on Higher Education (WHEC2022) was to reshape thinking and practice in higher education to ensure sustainable development for the planet and for humanity.

And the common denominator in these meetings is the need for policy formulation, assumed by the participating nations, to achieve the proposed global goals and targets.

Education policies in Mexico in terms of inclusion

Public policies must be understood as dynamic and changing in their operational in their operational aspects, but their basic principles must be, in any case, medium- and long-range policies based on the general interest.

Jorge Guillermo Cano, 2006

In Mexico, education policies are generally derived from Article 3 of the Political Constitution of the United Mexican States (CPEUM) which, since 1917 when the Constitution was approved, has undergone multiple reforms that have had (some more than others) a strong impact on the development of education in the country.

From Article 3 of the Constitution, the federal government has derived, on the one hand, the planning of the National Education System, with the plans and programmes that it is responsible for guaranteeing; and, on the other hand, a whole legislative and regulatory framework (laws, decrees, agreements, etc.) that guides the course of education.

CPEUM (1917)	Numerous reforms. Of the 136 articles, with the exception of a few, all have been amended (748).
Article 3 of the Constitution	11 reforms (and one Erratum in 1993). Among them: the first focused on socialist education. Mention has already been made of the second reform (1946): innovative, humanist. And the third reform (1980) establishes the autonomy of universities and higher education institutions.
Last amendment (15-MAY-2019)	It places various emphases in relation to inclusion and equity. Although the first sentence reaffirming education as a right for everyone remains intact, it immediately expresses the State's guarantee of higher education and states that it shall be compulsory, "in terms of section X of this article".
Section X	"The compulsory nature of higher education corresponds to the State. Federal and local authorities shall establish policies to promote inclusion, permanence and continuity, in terms established by law. They shall also provide means of access to this type of education for those who meet the requirements set out by public institutions".

Highlight	About the steering role of education assumed by the State, it is specified that, "in addition to being compulsory, it shall be universal, inclusive, public, free and secular". Another aspect to note is that it is added that: "Education shall be based on unrestricted respect for the dignity of persons, with a focus on human rights and substantive equality".

Table 1 Reforms and policies from the CPEUM onwards
Source: Own elaboration based on the analysis of the reforms to Article 3 of the Constitution

Other important proposals from the latest reform are the following:

Section "II. The criterion that will guide education [...]" in subsection c), refers to respect for cultural diversity (which is fundamental for social and educational inclusion), and to "the ideals of fraternity and equality of rights for all". And it goes on to make other points worth highlighting:

- It shall be **equitable**, for which the State shall implement measures that favour the full exercise of people's right to education and combat socio-economic inequalities.

- It shall be **inclusive**, by taking into account the diverse abilities, circumstances and needs of learners [...];

- It shall be **comprehensive**, educating for life, with the aim of developing cognitive, socio-emotional and physical capacities that enable people to achieve their well-being; and

- It shall be of **excellence**, understood as the constant integral improvement that promotes the maximum learning achievement of students, for the development of their critical thinking and the strengthening of ties between school and community (emphasis added).

Regarding the reform to article 73 of the CPEUM, section XXV specifies that it seeks to "unify and coordinate education throughout the Republic, and [...] ensure the fulfilment of the aims of education and its continuous improvement within a framework of inclusion and diversity".

Inclusion is not only present in the documents governing education, but also appears in the provisions of other bodies such as the National Human Rights Commission, which establishes a set of them, among which it is worth highlighting:

Right to equality and prohibition of discrimination: which prohibits any exclusion or differential treatment based on ethnic or national origin, gender, age, disability, social status, health conditions, religion, opinions, sexual preferences, marital status or any other that violates human dignity. It also establishes the "right to education" as a human right of all persons.

Some considerations regarding the documents analysed and the issues addressed can be summarised as follows:

Inclusion

- In Mexico, the official discourse is "inclusive" and, for the first time, favours the development of state-supported higher education (proposed compulsory).

- However, no clear path and no concrete strategies have been declared that would allow the fulfilment of these good intentions.

Funding

- Great uncertainty has been generated due to budget cuts for many Higher Education Institutions (HEIs).

- Creation of 100 new universities (in reality 140), with no certainty about the resources to support them, the programmes to be offered and sufficient (and recognised) professors to guarantee quality.

Teaching staff

- It should be noted that in the international documents studied, teaching staff are accorded vital importance.

- It is recognised that their status and conditions of service "represent a decisive element in achieving education for all" (World Declaration on Education for All, 1990, Art. 7).

Training

- In the above-mentioned reform, "teachers are key actors in the educational process and their contribution to social transformation is therefore recognised".

- It is still not clear how the "integral system of education, training and updating" will be implemented in order to contribute to a real improvement of the teaching staff.

It is also necessary to consider that, despite the elimination of the National Institute for the Evaluation of Education (INEE), which had been created with the so-called "Education Reform" (2013) by the previous government, it was replaced by the "National System for the Continuous Improvement of Education", similar and with similar functions to the eliminated body: "to carry out studies, specialised research and diagnostic, formative and comprehensive evaluations of the National Education System, to determine indicators of results of the continuous improvement of education", among other aspects.

Finally, although the official discourse appears to be solid, it must be taken into account that acknowledging does not mean acceding or conceding, and it is still too early to be able to evaluate the results of the implementation of these principles established in Article 3 of the Constitution, dedicated to education, but which are still being implemented in specific secondary laws (General Education Law / General Law on Higher Education) and, furthermore, it is still to be expected that this legislation will actually be heeded and complied with.

By way of conclusion: towards inclusive education

> The glaring contradiction between what is said in the regulations and what actually happens in many schools, "between what is said and what is done" generates enormous tensions and emotional tears that affect many vulnerable students and their families very negatively.

> Gerardo Echeita Sarrionandia, 2017

The information gathered so far allows us to confirm that inclusion is a basic right that appears in all the guidelines that govern the education and development of children, adolescents, young people and adults.

It is a concept that is very present today and that has aroused the concern of educational actors around the world. However, despite the popularity of the term, the number of projects, initiatives and concrete actions that have been launched are still not sufficient, have not been implemented in the most appropriate way or have not had the expected results and impact.

Progress in terms of inclusion has not been as significant as required, so there is still a serious problem of educational exclusion, especially in higher education with limited access and low coverage.

In order to combat exclusion, it is necessary to promote and defend education as a right, which requires guaranteed funding, free and compulsory education, the fight against all forms of exclusion and discrimination, and the strengthening of the quality of learning with a solid foundation in human rights, as Muñoz (2004) argues.

In a brief summary, and coinciding with the proposals of the Incheon Declaration: Education 2030, a new comprehensive approach is required that truly guarantees quality, inclusive, equitable education for all. An essential aspect is financing and optimising the use of resources in an effective, efficient and transparent manner. In line with this, systematic accountability is also essential, involving (and demanded by) citizens. And, with special emphasis, the participation and joint work of all those involved is indispensable in order to achieve the proposed objectives and goals. This will only be possible when it truly concerns everyone.

As has been shown, there are guidelines, laws, agreements, regulations and other documents, both at national and international level, to promote policies on the subject. However, achieving real educational inclusion and moving towards inclusive education depends on the participation of all.

The reason for this research project arose from the need to address this very relevant problem and to contribute, in some way, to greater educational inclusion, especially in higher education, trying to reduce the rate of exclusion that seems to be increasing over time.

In this sense, it is necessary to emphasise the importance of finding alternatives that help us, as education professionals, to improve the atmosphere in schools. Likewise, an environment that ensures equal and dignified treatment of all our students must be achieved in order to ensure permanence and successful educational achievement.

From this perspective, it is an obligation that goes beyond the academic. It is an ethical duty that we acquire by being responsible for the integral and quality development of the Mexican population, so that it can truly enjoy the inclusive education for all and for life, which it so richly deserves.

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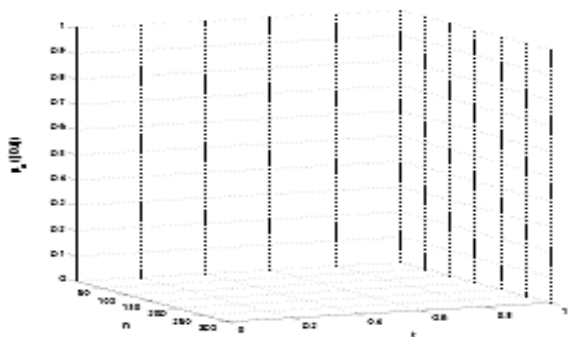
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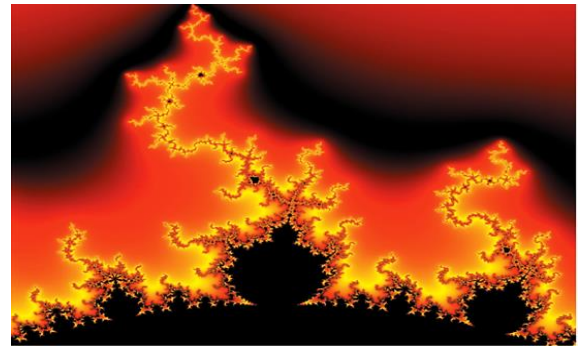
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