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The works must be unpublished and refer to issues of systems theory, networks, interconnectivity of companies, corporate governance, satellite communication, connectivity, TV transmitters and transmission, microwave links, radio communications and radio receivers, radio communication, radio receivers. radio, TV receivers, Telephony, Radio and TV transmitters and other topics related to Engineering Sciences and Technology.

Presentation of the Content

In Issue 17 is presented an article *Using digital platforms to learn a foreign language in times of pandemic*, by FLORES-GONZÁLEZ, Norma, CASTELÁN-FLORES, Vianey, ZAMORA-HERNÁNDEZ, Mónica and FLORES-GONZÁLEZ, Efigenia, with adscription at Benémerita Universidad Autónoma de Puebla, in the next article *Web system of interviews for tutoring in high school*, by SÁNCHEZ-JUÁREZ, Iván Rafael, PAREDES-XOCHIHUA, María Petra and MORALES-ZAMORA, Vianney, with adscription at Tecnológico Nacional de México campus San Martín Texmelucan, in the next section *University term papers during pandemic: experiences in the virtual classroom*, by IRETA-LÓPEZ, Hugo, GONZÁLEZ-LÓPEZ, Olga Yeri, BERTTOLINI-DÍAZ, Gilda María y PÉREZ-CANO, Marina, with adscription at Universidad Juárez Autónoma de Tabasco, in the next section *Computer system for process optimization. Practical case of a religious organization*, by CASTORENA-PEÑA, Jesús Abraham, DOMINGUEZ-LUGO, Alma Jovita, CAMPOS-POSADA, Gloria Elisa and CASTILLO-SIFUENTES, Néstor Daniel, with adscription at Universidad Autónoma de Coahuila.

Content

Article

Journal Applied Computing

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Using digital platforms to learn a foreign language in times of pandemic

Uso de plataformas digitales para aprender un idioma extranjero en tiempos de pandemia

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Abstract

In 2020, the education system closed schools and migrated the face-to-face teaching-learning process to the digital world due to the pandemic. Given this situation, it is necessary to investigate how this process is in virtual modalities. The purpose of this study is to identify which digital platforms teachers and students use to learn English and French at the School of Languages, BUAP, which ones include a techno-pedagogical model, and how often these platforms are in use. Methodologically, the study was a longitudinal (spring and autumn of 2020) quantitative approach with a descriptive scope on a sample of 1729 students. The findings report the identification of eight asynchronous and six synchronous platforms classified according to their use in this research context, of which the most frequent and with the most users are Zoom, Moodle, and Teams in asynchronous and synchronous formats. Besides, the last two platforms were the only ones containing a techno-pedagogical design. In conclusion, the platform with a didactic model requires students a more frequent usage of it and usually complement it with other platforms, applications, and tools to immerse students in their learning process.

Digital platforms, Teaching-learning process of English and French as a foreign language, Techno-pedagogical design

Resumen

Durante el 2020, el sistema educativo cerró las escuelas y migró el proceso de enseñanza-aprendizaje presencial al mundo digital debido a la pandemia. Ante esta situación es menester investigar cómo dicho proceso se realiza en modalidades virtuales. Este estudio tiene como propósito identificar qué plataformas digitales utilizan los docentes y alumnos para aprender Inglés y Francés en la Facultad de Lenguas, BUAP, cuáles incluyen un modelo tecno-pedagógico y con qué frecuencia se utilizan dichas plataformas. Metodológicamente, el estudio se basó en un enfoque cuantitativo, con alcance descriptivo y corte longitudinal (primavera y otoño de 2020) teniendo como muestra 1729 alumnos. Los hallazgos reportan la identificación de 8 plataformas asincrónicas y 6 sincrónicas clasificadas según su uso en este contexto de investigación, de las cuales las más frecuentes y con mayor número de usuarios son Zoom; Moodle y Teams en formato asincrónico y sincrónico, siendo estas dos últimas las que contienen un diseño tecno-pedagógico. En conclusión, se tiene que las plataformas que incluyen un modelo didáctico demandan más frecuencia de uso de la misma plataforma y se complementan con otras plataformas, aplicaciones o herramientas para lograr la inmersión del alumno en su proceso de aprendizaje.

Plataformas digitales, Proceso de enseñanza-aprendizaje del inglés y francés como lengua extranjera, Diseño tecno-pedagógico

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Introduction

In the predominant preference for face-to-face learning and, in some cases, resistance to virtual or digital learning, the latter is gaining advantage and importance in the educational sphere as a means of working in times of contingency. The migration from one format to another, especially in the conceptualisation of the teaching and learning process, has numerous implications, especially those that have to do with the main actors in the curriculum as the role of the student and the teacher, the learning process, the teaching process, the presentation of content, the design or adaptation of materials, interactions, feedback, and the evaluation process, to mention a few. The research is justified considering the background above and the changes that teachers and students are experiencing in the educational field. That is why its purpose is to know what platforms were used in the English and French teaching-learning process in the Bachelor's Degree at the Benemérita Universidad Autónoma de Puebla, during the spring and autumn 2020 periods when the migration from on-site sessions to virtual modality took place due to the pandemic caused by the SARS-CoV-2 virus. From the objective of this study, three research questions arise: what are the platforms used for teaching English and French in the Faculty of Languages of the Benemérita Universidad Autónoma de Puebla? Which platforms include a techno-pedagogical design, and how often were these platforms used?

Theoretical framework

Teaching in virtual environments requires both a teacher prepared not only in the content of the subject and also a specialist in technology and didactics (Díaz-Barriga in Casanova, 2020) so that he could become a designer of techno-pedagogical models according to the English or French subject as a foreign language at a higher level, the context of the present research. The following lines describe the characteristics of virtual environments and their implications.

Virtual education

It is a technology-mediated form of distance education where students and teachers have classes either asynchronously or synchronously through different tools such as videoconferencing, multimedia systems, and platforms, to mention a few of them.

Thus, the use of Information and Communication Technologies has given rise to the so-called virtual modality, generating innovation in the teaching-learning process and, in general, in educational practices to promote equality in education (UNESCO, 2013). Another contribution of this modality focuses on the adaptation to the characteristics of users, allowing them a flexible learning process in time and space, low cost, with variability of strategies and teaching techniques, gamified, multifaceted, and dynamic for learning activities which can be collaborative, cooperative, synchronous and asynchronous. However, it is fundamental to mention that to obtain a techno-pedagogical design with the above peculiarities, both ICT and Learning and Knowledge Technologies (LKT) are necessary to generate appropriate learning in virtual environments.

This innovation became even more latent due to the current stage of contingency, where education migrated to a virtual format giving rise to a disruption, which happens when there is a radical and sudden change in the educational scenario (Adell and Castañeda, 2012). However, in several contexts, it has been identified that the biggest challenge for teachers has been to embed their content in a virtual modality, reducing this process to the application of the face-to-face model in a virtual one without stopping to plan and design the techno-pedagogical model, to identify the techniques, strategies, methods and in general how to do it (Gisbert, 2020). However, it is clear the disruption took both students and teachers by surprise, and there was not enough time to carry it out.

Characteristics of virtual education

The virtual modality represents one of the most *ad hoc* options for working at higher education level, or at least for the context of this study, due to its advantages:

- This modality contains a multi-faceted format that adapts to learning styles. In virtual education, those formats allow teachers to develop dynamic activities with varied resources for each user, strategies, and methods, even making it possible to adapt, readapt or design their materials at a low cost.

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- The synchronous or asynchronous communication and interaction tools foster collaborative or cooperative work between students and teachers or among themselves and contribute to the development of experiences, good practices, and the construction of meaningful learning.

- As it is a learning process based on students, they could work at their own pace in terms of space, time, and rhythm, allowing them to decide how to learn, when to learn, and with what mechanisms, contributing to the development of autonomous learning.

- In this modality, the platforms promote the development of meta-cognitive learning through the design of different integrative activities, which evidence progress in students.

- Thanks to these characteristics, and based on the results, the teacher or facilitator modifies or changes the techno-pedagogical design.

According to UNESCO (2013), other outstanding features include:

- Encouraging the creation of learning communities and a sense of belonging to them.

- Promoting the teaching-learning process with gamification and augmented reality (situated learning), supporting students with different learning styles or differentiated abilities through personalised learning.

- Providing immediate and personalised assessments and feedback.

- Contributing to equity in education and expansion of educational coverage.

A complement of this modality is the combination of asynchronous and synchronous sessions through the videoconferencing platforms, which along with the didactic strategy of the flipped classroom, results in a more productive time dedicated to the learning process.

At this point, specific changes in the roles of teachers and students are a must because although the actors in the curriculum are the same, the means and formats through which the teaching-learning process took place are varied and different. In this case, the teacher focuses on being a curator or designer of courses in virtual environments, tutor, facilitator, and guide of the teaching-learning process, providing the necessary resources and tools for the student to develop competencies that allow him to acquire not only knowledge but also skills, values, and attitudes.

In other words, he plans a learning experience, and the student executes it under his mentorship during their relationship cycle when interacting. In such a process, he must integrate tasks and theoretical knowledge to help his students solve specific challenges by creating value and social innovation (Carrasco and Baldivieso, 2016).

As far as the student is concerned, being the principal actor implies having an active role. Thus, he must develop cognitive, metacognitive, and self-regulation strategies to monitor and regulate his process, learn collaboratively, use digital competencies to carry out tasks with the help of tools, applications, or platforms, and most importantly, develop autonomous learning, a key element (Pareja, Calle, and Pomposo, 2016). In this regard, Pardo and Cobo (2020) argue that the ideal way to gain knowledge in confinement is through autonomy to promote the development of strategies to learn at all times in a personalised environment.

Although this modality presents learning in a novel way through techno-pedagogical designs with defined teaching strategies and methodologies, the modality by itself does not provide desirable performance, as it needs other elements.

Research findings also show a direct relationship between the students' active role and autonomous participation in the virtual environment through problem-solving, task completion, projects, readings, and academic performance (Domínguez, Álvarez, and Gil, 2016).

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Teaching-learning strategies in virtual environments

Teaching-learning strategies play a fundamental role, as they allow students to develop cognitive and metacognitive skills for the construction and deconstruction of knowledge thanks to the tutor's techno- pedagogical design. They also contribute to their autonomous learning, constant and active participation in the virtual environment, and application of different tools, formats, and media for knowledge representation.

In the particular case of the English and French teaching process, there are applications, tools, or platforms linked to a virtual environment that prioritise the development of the four basic skills, namely written and oral production, reading, and listening comprehension collaboratively or individually. Some examples are graphic organisers, infographics, mind and concept maps, WebQuest, comparative or double-entry tables, Grammarly app, Quizlet, discussion forums, Duolingo, Calameo, Padlet Memrise, 4Teachers, Memorama, mobile application video games, Kahoot, Pixton, Powtoon, rigorous techno-pedagogical designs in asynchronous virtual platforms, a videoconferencing platform for synchronous interactions, among others.

Moreover, there are different multimedia systems and formats to carry out the process of teaching and learning a foreign language in a virtual environment which allows for increased participation and interaction, achieving full integration in learning situations. According to several types of research (Klimenko & Alvares, 2009; Cázares, 2009; Rodríguez, 2011; Sierra, 2011; Colmenares, 2012; Chirinos 2013; Pellas, 2014), teachers and students have to develop teaching and learning strategies to achieve a successful process and results.

Teaching strategies

Teachers must develop strategies to foster academic, pedagogical, technical, digital, social, and affective competencies in the virtual modality to carry out the teaching-learning process based on a techno- pedagogical model (Mas, 2012; Koehler et al., 2015). The following lines present a classification and description of each one.

Academic-pedagogical competencies. They facilitate learning, planning, and organisation of a course in virtual environments (Torra et al., 2012) and its evaluation. This category also includes didactic mediation strategies, which refer to the techniques, methods, and procedures used in the teaching-learning process with the firm purpose of ensuring the student learns to learn and appropriates knowledge (Woolfolk, 2010).

Digital-technical competencies. These give priority to promoting autonomous work through the use of digital teaching materials, virtual communication channels for academic counselling, and digital tools and platforms (Botero et al., 2021) to deliver virtual courses that enable the innovative and creative development of a techno-pedagogical one (Koehler et al., 2015).

Socio-affective competencies. They favour respectful and friendly interaction among participants with active participation and empathy (Pertegal-Felices et al., 2011) on the part of the teacher in the conditions of study, especially in stages of confinement, such as those faced today.

Learning strategies

Students must develop cognitive, metacognitive, and self-regulation strategies to achieve meaningful learning through the techno-pedagogical model, designed with the support of different tools, applications, and platforms with synchronous and asynchronous formats. The following lines explain each one in detail.

Cognitive strategies. Students use them to focus their attention and, in turn, allow them to process information and remember it. They are also closely linked to the practical level of the process (Lupón, Torrents, and Quevedo, 2012). An example is search, information selection, and processing strategies.

Metacognition strategies. They let students control, evaluate and plan their learning; therefore, their objective is to monitor ways to achieve a goal. In this sense, three components took place: metacognitive knowledge, awareness, and self-regulation (Tamayo in Buitrago, 2012).

ISSN-2531-2952

Furthermore, when students use such strategies, it is easy for them to process information, and to some extent, they improve their self-knowledge to the point of self-control for the planning of their tasks as well as the means to face, solve, regulate and even self-evaluate them, as they apply what have learned in their immediate context or other similar contexts. Here, the virtual classroom and communication tools, seen as interactive metacognitive media, contribute to evidence the students' knowledge representation (Burgos, 2014).

Self-regulation strategies. These permit the development of critical thinking through flexible and autonomous learning that adapts to students' needs, learning styles, spaces, and times to successfully meet the requirements of society or their immediate background in search of quality and innovative production (Osses and Jaramillo, 2008; Barnard et al., 2010).

It is crucial to highlight that this autonomous teaching does not displace the teacher, as he recovers his vitality in the mediation between technologies and the learning process through his multifaceted roles such as facilitator and guide in the learning process in terms of content and digital technical competencies (use of applications), curator, planner, organiser, tutor, designer and evaluator (González et al., 2012).

All the elements mentioned above, together with the tools, applications, or platforms suitable for situated learning, make successful e-learning possible.

Methodology

The phenomenon was analyzed from the quantitative approach using a questionnaire (instrument) with a Likert-type scale to collect the information, organise the data, and subsequently carry out the analysis using SPSS software to answer the following research questions (RQ).

RQ1. Which platforms are used for teaching English and French at the Faculty of Languages at the Benemérita Universidad Autónoma de Puebla?

RQ2. Which platforms include a techno-pedagogical design?

RQ3. How often are these platforms used in the English and French teaching-learning process?

Sample

The sample consisted of 1729 students from the English and French Bachelor's degree programmes at BUAP enrolled in the Spring and Autumn 2020 terms.

Data collection and analysis

To obtain the data, 1729 students answered the instrument at the end of the autumn and spring terms during 2020. Subsequently, we proceeded to elaborate the analysis model from which the results will be analysed and interpreted, as follows:

(RQ)	Period	Type of platform according to its use in the research context	
		Asynchronous	Synchronous
RQ1. Platforms	Spring	Graphic 1	Graphic 3
	Autumn	Graphic 2	Graphic 4
RQ2.	Spring-Autumn	Table 2	X
RQ3. Frequency in terms of use	Spring-Autumn	Table 3	Table 4

Table 1 Analysis model
Source: Own elaboration

Results

The results indicate that the platforms used in the English and French programmes of the Faculty of Languages, BUAP are asynchronous and synchronous. The following section describes them.

Use of asynchronous platforms

Asynchronous platforms, as a host of the techno-pedagogical model, play a fundamental role in the virtual modality because, over there, students find everything related to their courses like support material, anthology, digital books, activities, individual or integrative learning evidence, evaluations, and feedback, among others.

For this study, the findings are:

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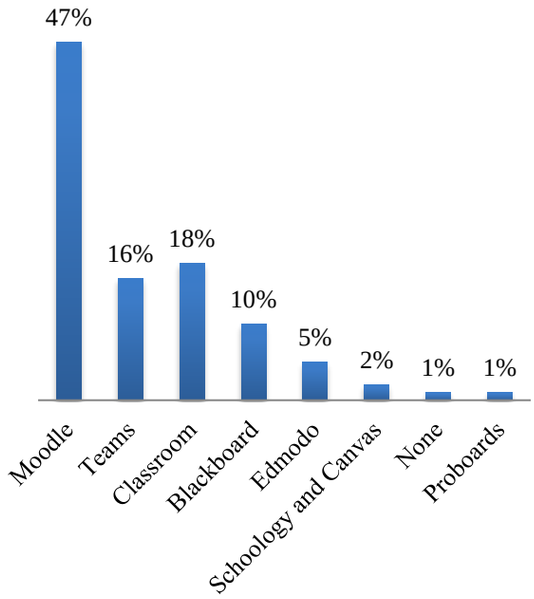


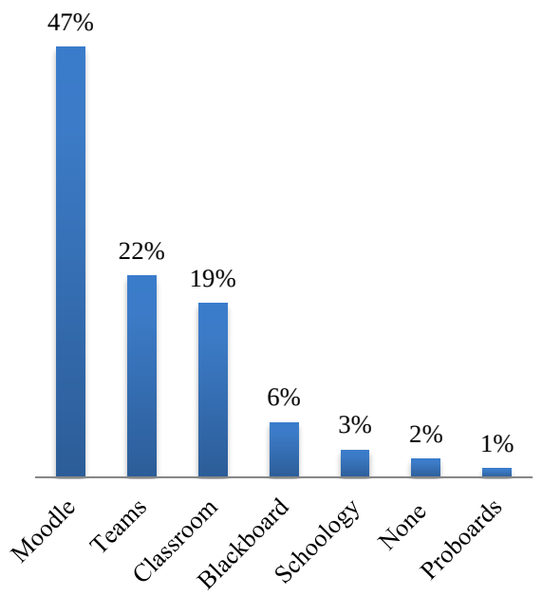
Graphic 1 Use of platforms classified as asynchronous due to the role that teachers assigned to them for the English and Fench teaching process at the Higher Education level during the spring 2020 period

As can be seen in the graph, the most used platform was Moodle, followed by Classroom, Teams, Blackboard, Edmodo, Schoology, and Proboards. It is worth mentioning that 1% of the sample indicated that they did not use any.

In the case of Classroom, Blackboard, Teams, Schoology, Canvas, and Edmodo, students said that they mainly used them as a storage space for readings, digital books, and sending work asynchronously, although some of them offer a synchronous version through videoconferencing.

In contrast, the function of Moodle was a little more varied, since in this virtual space, in addition to storing information, the students carried out activities in forums and solved exercises in asynchronous format, attributes that contributed to the positive and high perception of the sample.

In Proboards, the work focused on receiving information as a platform for online education without synchronous sessions.



Graphic 2 Use of platforms classified as asynchronous due to the role that teachers assigned to them for the English and French teaching process at the tertiary level during the autumn 2020 period

During this period, it is clear that the use of the platforms decreased to seven, and the number of students using them increased in some cases. For example, Teams registered an increase of 6%, Classroom, and Schoology 1%, respectively. In contrast, Blackboard decreased by 4%. However, Moodle (47%) and Proboards (1%) maintained the same users. It is worth noting that again 1% of the sample did not use a platform.

Concerning their use, the following tend to emerge: Moodle and Teams provided users with materials and activities aligned to the thematic contents of each subject such as reading files, PowerPoint presentations as material for the synchronous class, interactive exercises based on videos, H5P format, escape rooms, mazes, glossary of terms, individual and collaborative activities accompanied with rubrics or checklists for evaluation and self-evaluation. Besides, they also contain exams, virtual spaces to send tasks and receive feedback, hyperlinks to external applications for gamified learning such as flashcards, crosswords, video games operable on PC and mobile phones, interactive quizzes, and 2.0 and 3.0 tools, in general, attributes that consolidated them as ideal for language learning, according to the students' perception.

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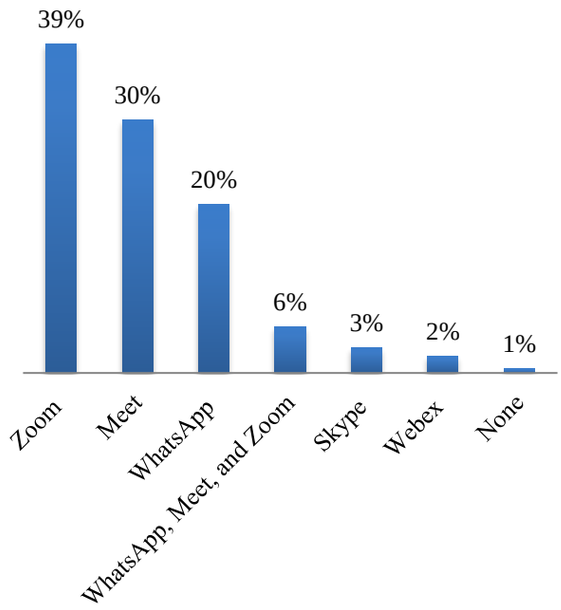
It is clear that gamification, considered a motivational and innovative element to foster the development of skills and interaction among its users (Castañeda, 2021), contributed to meaningful foreign language learning. It is because of its added value in role-play simulation, augmented reality, and dynamic learning based on collaborative models. Indeed, findings point to digital formats as triggers of motivation and interest for quality task completion (Fariña-Vargas et al., 2013; López and Silva, 2014).

The previous elements provide evidence of learning and knowledge technologies to adapt, readapt, design, and embed thematic content in a virtual modality.

For Classroom, Blackboard, and Schoology, their function focused on providing an asynchronous virtual space for sending assignments and support materials such as readings, audiobooks, and PowerPoint presentations on class topics. Finally, Proboards continued with the same utility as in the previous period, and the Canvas platform did not appear functional for users.

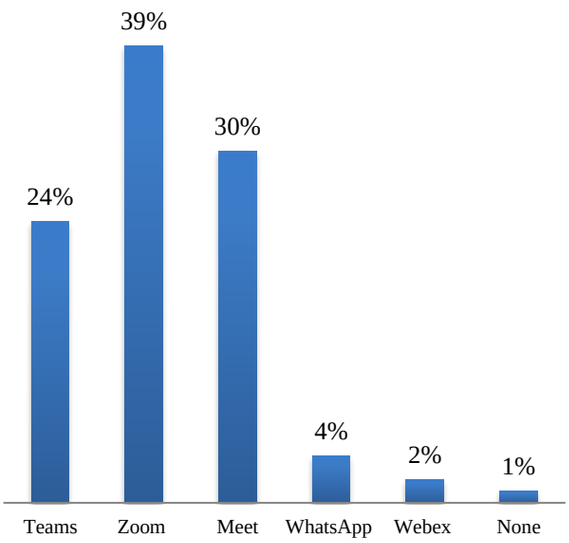
Use of synchronous platforms for videoconferencing

An essential component for the virtual modality is the synchronous interaction, as it contributes to the sense of belonging to a community and allows the explanation and accompaniment of the tutor teacher in real-time to complement the asynchronous teaching-learning process, especially in this research context where interaction is an essential element for learning English or French.



Graphic 3 Platforms used for videoconferencing, spring 2020

Although in many scenarios, the pandemic and confinement stage took the main actors in the curriculum (teachers and learners) by surprise, in this case, the vast majority of teachers responded to the emerging learning and used various synchronous platforms to continue their practices. Thus, 39% opted for Zoom, 30% Meet, 20% WhatsApp, 6% a combination of WhatsApp, Meet and Zoom platforms, 3% Skype, and 2% Webex. However, 1% chose not to have synchronous interactions with their students.



Graphic 4 Platforms used for videoconferencing, autumn 2020

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In the following period (autumn 2020), teachers made more concrete choices regarding the use of video conferencing platforms and used only 5 (one less compared to spring 2020), as follows: the highest percentage of users was recorded in Zoom (39%), followed by Meet (30%), Teams (24%), WhatsApp (4%) and Webex (2%). Furthermore, 1% of the population did not use any platform and chose to work only with an asynchronous one. It is worth mentioning that this is the same sample that did the same in the Spring 2020 period. Up to this point, the study has revealed the platforms used, but it is also fundamental to identify if those platforms included a techno-pedagogical design.

RQ2. Which platforms include a techno-pedagogical design?

Platform	Period	Complements	Inclusion of techno-pedagogical model
Moodle	Autumn	Zoom External tools Applications	X
Teams	Autumn	External tools Applications	X

Table 2 Asynchronous platforms that included a techno-pedagogical model or design

As discussed in the previous section, the platforms that evidenced a techno-pedagogical design were Moodle and Teams, only in the autumn period. In the case of Moodle, such techno-pedagogical design contained the asynchronous (Moodle) and synchronous platforms (Zoom for videoconferencing) along with tools and applications that fostered interactive and innovative exercises.

For example use of tools or applications for knowledge representation (graphic organisers, infographics, mind and concept maps), for assessment (rubiStar and checklist) for problem-based learning (WebQuest), for learning vocabulary and pronunciation (Memrise, Duolingo), for correcting texts (Grammarly app), for practising writing skills (discussion forums, Pixton, Powtoon) for presenting information (Padlet), for gamified learning (Quizlet, mobile application video games, Kahoot, Memorama) and the resources of the Moodle platform itself for developing interactive activities and exercises (H5P, file, page, glossary of terms, exam bank), as well as virtual spaces for sending tasks and feedback, among others.

Concerning Teams, it functioned as an asynchronous and synchronous platform because of the videoconferencing room. This design was composed of embedded elements thanks to the platform's resources such as files with reading material, escape rooms, collaborative and individual activities accompanied by rubrics or checklists for evaluation and self-evaluation, exams, recordings of synchronous sessions, a translator, digital whiteboard, multimedia resources, virtual spaces for sending assignments and receiving feedback. In addition, hyperlinks for external tools and applications were present to have gamified learning as flashcards, crossword puzzles, and video games for PCs and mobile phones.

These results lead to the following research question because it is crucial to know how often platforms were in use for learning either English or French since the success of this modality depends to a large extent on the constancy with which students work in these digital media and formats.

RQ3. How often are these platforms used in the English and French teaching-learning process?

The findings indicate the frequency of asynchronous platforms during the spring (A) and autumn (B) 2020 periods.

		Frequency in days				
Platform	Period	< 3	3-4	5-6	7	Total
Moodle	A	7%	20%	12%	8%	47%
	B	1%	13%	25%	8%	**47%**
Teams	A	10%	2%	3%	1%	16%
	B	0%	14%	8%	0%	**22%**
Classroom	A	10%	7%	1%	0%	18%
	B	0%	18%	1%	0%	**19%**
Blackboard	A	9%	0%	1%	0%	10%
	B	5%	0%	1%	0%	**6%**
Edmodo	A	4%	0%	1%	0%	5%
	B	0%	0%	0%	0%	**0%**
Schoology and Canvas	A	0%	2%	0%	0%	2%
Schoology	B	0%	2%	1%	0%	**3%**
Proboards	A	1%	0%	0%	0%	1%
	B	1%	0%	0%	0%	**1**%

Table 3 Asynchronous platforms: Frequency of use in the spring and autumn 2020 periods

As can be seen, the frequency of use of each platform changed from one period to another. In most cases, it increased, except for Blackboard that decreased by 6%, and Edmodo, which ceased its use during the autumn. As far as Proboards is concerned, there is no change, and its frequency of use is minimal (less than three days a week).

ISSN-2531-2952

Moodle was the platform with the highest current usage (25% between five and six days and 8% seven days respectively) and with the most users (47%) compared to the other platforms in both periods.

In the particular case of Teams, its usage increased by 6% of the overall percentage. During autumn, 10% used it less than three days, and in spring, 14% used it between three and four days, and 8% between five and six days respectively.

The data shows that if there is a techno-pedagogical design hosted on a platform, the demand for time, dedication, and immersion of the user (Schindlholzer, 2016) in this context will be frequent so that they can carry out their activities or tasks individually or collaboratively, of course always in a flexible environment according to their times, spaces, learning styles and in an autonomous way (Pareja, Calle, and Pomposo, 2016).

Another aspect the data shows is related to teachers who improve their teaching strategies and competencies to embed their contents in the virtual modality.

Regarding the use of platforms and their function (graph 2), it is indisputable that the content hosted in both periods shows the innovation of the teachers because, in autumn, the use of LKT to embed the content in the virtual modality is evident through digital resources and formats adapted to the students' needs (Middelbeck, 2019) and their context with the 2.0 and 3.0 tools, applications, and platforms.

Therefore, teachers must know strategies to develop academic- pedagogical, technical-digital, and socio-affective competencies (Pertegal-Felices et al., 2011; Colmenares, 2012; Torra et al., 2012; Koehler et al., 2015) to design an innovative teaching model according to the particular needs of their students, programme, and objectives (Carrasco and Baldivieso, 2016).

Classroom also showed a 1% increase in the overall percentage, with 18% using it between three and four days and 1% using it between five and six days.

Other platforms such as Schoology and Canvas recorded a frequency of between three and four days per week during period A, however in period B, one of them stopped being used (Canvas), and the other had an increase of 1%, using it between five and six times per week.

In contrast, Blackboard shows a decrease in the frequency of 4%, with 9% using it less than three days in spring and only 5% in autumn, and Edmodo ceased its use in autumn. The results of the latter platforms are possibly related to the function that teachers assigned to them, which centred on space for sending assignments, socialising materials, and carrying out synchronous sessions since if there is no previously structured teaching model according to content and programme, their use is minimal.

Synchronous platforms

Frequency in days						
Platform	**Period**	**< 3**	**3-4**	**5-6**	**7**	**Total**
Zoom	A	37%	2%	0	0	39%
	B	0%	39%	0%	0%	39%
Teams	A	0%	0%	0%	0%	0%
	B	0%	24%	0%	0%	24%
Meet	A	30%	0%	0%	0%	30%
	B	30%	0%	0%	0%	30%
WhatsApp	A	20%	0%	0%	0%	20%
	B	4%	0%	0%	0%	4%
WhatsApp, Meet and Zoom	A	6%	%	0%	0%	6%
	B	0%	0%	0%	0%	0%
Skype	A	3%	0%	0%	0%	3%
	B	0%	0%	0%	0%	0%
Webex	A	2%	0%	0%	0%	2%
	B	0%	2%	0%	0%	2%

Table 4 Synchronous platforms: Frequency of use for videoconferencing during the spring and autumn periods 2020

According to the data obtained, the principal function of the synchronous platforms was to transmit videoconferences where the teacher explained his class, resolved doubts regarding the subject, and the students participated individually and in teams based on the readings previously done (flipped class). It leads us to deduce that teachers had more classes with real-time interaction in autumn than in spring, as in most cases, there was a considerable increase in the frequency of use.

In the case of Zoom (the platform used by teachers who worked with Moodle asynchronously), the frequency changed from less than three to between three and four days of use per week and had the same number of users.

ISSN-2531-2952

In the case of Meet, the frequency of use and number of users remained the same in both periods.

We also identified the use of a new platform. It was Teams (used between three and four days per week), which replaced Skype, the combination of WhatsApp, Meet, and Zoom, and a percentage of WhatsApp, as the latter had a decrease from 20% to 4% of users although its frequency remained the same (less than three days). Finally, Webex has the same number of users, but its frequency increased to three and four days.

This analysis confirmed that asynchronous platforms (Moodle and Teams) that contain a techno-pedagogical design also show a high percentage in the usage of synchronous ones (Zoom and Teams) as they complement each other.

These results corroborate that the benefits of using didactic or techno-pedagogical models in virtual environments, based on learning and knowledge technologies, contribute directly to the learning process and students' performance more than the resources selected for such a process.

Therefore, there is no point in using many tools, platforms, applications, or digital formats if they do not pedagogically align to a programme, objectives, content, and student's needs.

Conclusions

The study describes both synchronous and asynchronous platforms regarding their function and usage for the English and French teaching-learning process.

When analyzing the asynchronous platforms, Moodle and Teams demonstrated the highest frequency of usage and number of users due to the techno- pedagogical model. Therefore, that frequency is closely related to such a factor. Contrarily, the synchronous platforms with the highest frequency of use were Zoom and Teams.

Besides, a combination of synchronous and asynchronous tools provided learning outcomes like Moodle with Zoom and Teams with its videoconferencing room. It leads to conclude that the didactic model must include synchronous and asynchronous platforms and be designed under academic, pedagogical, digital, technical, affective, and social competencies because the immersion of students in a flexible and autonomous learning process mediated by cognitive, metacognitive, and self-regulation strategies will undoubtedly contribute to their academic performance.

In summary, in this particular context, digital platforms show a positive impact to continue the teaching-learning process during the confinement stage. Indeed, those digital platforms are not only a repository of information but also a learning model that enhances suitable educational practices.

Finally, this research is the beginning of the inquiry into the virtual English and French teaching process since it is still necessary to analyze different variables that take place in such a process like the students' and teachers' perceptions regarding the virtual modality or the use of synchronous and asynchronous platforms, strategies, techniques, competencies, and methods to design their techno-pedagogical model. Others could be how students carry out their learning process in the virtual modality or the possible correlation between digital formats and academic performance.

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Web system of interviews for tutoring in high school

Sistema web de encuestas para tutorías en Bachilleratos

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Abstract

Academic tutoring is one of the strategies implemented at different educational levels where students (tutors), teachers (tutors) and parents are involved, which aims to improve school performance, solve school problems and develop habits of study and work, contributing to the decrease in failure rates and school dropouts. Some techniques that help to identify if a student is going through difficult situations are interviews and tests that allow evaluating aptitudes, abilities and behaviors. That is why a web system is developed for the high school that allows supporting the different actors of the tutoring in storing and consulting the information provided, the system will be able to register users, subjects, groups, assign tutors, conduct interviews and tests, view the results obtained, write comments on students with school performance problems and allow reports on failure and dropout rates.

School tutoring, School dropout, Web system

Resumen

La tutoría académica es una de las estrategias implementadas en diferentes niveles educativos en donde están involucrados los estudiantes (tutorados), docentes (tutores) y padres de familia, la cual tiene como objetivo el mejoramiento de rendimiento escolar, solucionar problemas escolares y desarrollar hábitos de estudio y trabajo, contribuyendo a la disminución de índices de reprobación y abandono escolar. Algunas técnicas que ayudan a identificar si algún estudiante pasa por situaciones complicadas son entrevistas y test que permiten evaluar aptitudes, habilidades y conductas. Es por ello que se desarrolla para el nivel medio superior, un sistema web que permita apoyar a los diferentes actores de la tutoría en almacenar y consultar la información proporcionada, el sistema será capaz de dar de alta a los usuarios, materias, grupos, asignar tutores, realizar entrevistas y test, ver los resultados obtenidos, escribir comentarios de sobre alumnos con problemas de rendimiento escolar y permitirá hacer los reportes sobre índices de reprobación y deserción.

Tutoría escolar, Abandono escolar, Sistema web

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Introduction

The Mexican government, through the Subsecretaría de Educación Media Superior, since 2013 implemented the project called Movement against School Abandonment which, with the participation of different actors, look for reduce school desertion and increase access to Educación Media Superior (EMS) through different strategies such as tutoring.

The tutorials for the Mexican Institute of Industrial Property (2017) “improve the attitude and availability to learning due to the fact that an empathic act is generated when receiving or giving tutoring between peers, communication skills and personal development are improved and In addition, it encourages the active participation of the students involved in their own learning process. Six half-year of study at EMS, the manuals range from how to prevent the risks of school dropout to the participatory planning process for the plan against school dropout.

In the general high schools of the region of San Martín Texmelucan the program "I do not abandon" is carried out which, for (SEMS – Secretaría de Educación Media superior, by its acronym in Spanish) indicates that "The Movement against School Abandonment is a comprehensive national strategy that involves joint participation and coordinated by educational authorities, federal and state, school administrators, teachers, parents, students and society in general, to achieve higher rates of access, permanence and successful completion of upper secondary level studies."

This program makes use of the 12 manuals, within which there are tools that serve as support at work for tutors, such as formats, quiz and annexes to be answered by managers, teachers, students and parents.

Each manual has different tools that the tutors use in their tutored students, however, at the time of applying the interviews or tests a large number of copies must be generated and that causes the waste of paper, many times they tend to lose the applied tools and when information needs to be consulted, it is no longer available.

That is why it is necessary to develop an information system to support the processes and decision-making of the "I do not abandon" program, with this system times will be optimized in obtaining results, as well as avoiding loss of files, keeping track of the number of students who have had tools applied, generation of tutorial reports, as well as avoiding paper consumption.

With the system, the campus principal will be able to add teachers, students, parents, subjects, add students to their groups and subjects. The tutors will be able to carry out the interviews and tests requested by the group tutor, as well as view their results or print them. The group tutor will view and print the results of the tools applied to each of his tutors.

It is important to mention that the high-school who will use the system must prepare the personal data privacy notice in order to inform teachers, students and parents of the main characteristics of the treatment that will be given to the information obtained. The Instituto de Transparencia, Acceso a la Información Pública, Protección de Datos Personales y Rendición de Cuentas de la Ciudad de México (2021) says that at the medium security level "refers to the security measures required for those data systems related to the commission of administrative or criminal offenses, public finances, financial services, patrimonial data, as well as the systems that contain data with which it is possible to obtain an evaluation of personality or profiles of any kind in the present, past or future, " so the project will be supported by this level of security because it does personality evaluations or profiles of each student.

Metodology

There are different software development methodologies, which are classified in classic methodologies such as waterfall or spiral and in agile methodologies such as XP (eXtreme Programming) or SCRUM which allow to take control of the project, to carry out this project the SCRUM methodology was chosen in which “partial and regular deliveries of the final product are made, prioritized by the benefit they bring to the recipient of the project.

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Therefore, Scrum is especially suitable for projects in complex environments, where you need to get results soon, where the requirements are changing or poorly defined, where innovation, competitiveness, flexibility and productivity are essential. each approach has its own steps" (Scrum n.d.). In general, to develop a software project it is necessary to go through different stages of software engineering: analysis, design, implementation and testing.

The first stage is of utmost importance because it is when the development team contacts customers and end users in order to obtain information from the system, this is called a obtaining requirements, the development team analyzes each of the requirements provided in order to decide the priority of its development. Rogger (2010) states: "In an ideal requirements engineering context, the conception, consultation, and elaboration tasks determine the customer's requirements in sufficient detail to advance to the next software engineering activities."

For this phase, he contacted the general high school "Professor Ignacia Islas" in the community of San Cristóbal Tepatlaxco, interviewing the director and the school tutor, who made known the processes and roles that are handled. The information that will be optimized will be on individualized attention, control of attendance at tutorials, fresh interview with the tutor and the parent, from manual 1 (Manual to prevent the risks of school dropout in upper secondary education).

The format for monitoring students at risk and the survey for detecting coexistence problems will be digitized, from manual 2 (Manual to receive new students in high school schools), the annexed personal and academic profile questionnaire is considered for manual 3 (Manual to promote better study habits in high school schools) the test will be placed to detect study habits and learning styles.

The classroom and life train functioning tests are taken from manual 7: "Manual to support educational guidance in upper secondary schools". From manual 9: "Manual to be a better tutor in upper secondary education schools" the test of knowing learning styles is extracted, finally, from manual number 11: "Manual for the development of socio-emotional skills in EMS schools".

The questionnaires in annexes 1: levels of empathy, 2: attributions and 4: type of mentality will be implemented.

In addition to these manuals, it is important to keep track of teachers in front of the group, the positions that teachers have (teacher, tutor, school tutor and director), the tutors of each group, the subjects, parents, students, groups , surveys and of course, update the personal data of each teacher and student, send the password by email of a user who has forgotten, upload images such as the CURP(Unique Population Registry Code for its acronym in Spanish) , INE (National Electoral Institute for its acronym in Spanish), domiciliary receipt or any other document that is requested to the family guy. For this reason, not only will a system be developed that has the information on the results of each applied tool, but also the general information that is requested in the tutoring program.

For the development of the software, different programming languages and database managers were analyzed to facilitate its implementation, among which php, asp and jsp had been chosen with the My SQL, Sql Server and PostgreSQL databases, reaching the conclusion that php would be the best option with the Laravel framework, which "is an outstanding member of a new generation of web frameworks. It is one of the most popular php frameworks and it is also free and open source. " (Nutile. 2016) and as a My SQL database manager.

For Glajumedia (2020), "Java and PHP have strong benefits and support for the world's leading companies and the largest websites. Java has strong security and an easy connection to third-party APIs, making it much better for complex projects such as banking or supply chain industries. On the other hand, PHP is a fast and low-cost language solution for e-commerce and retail sales." This project does not require large transactions or connect with other APIs, that was one of the main reasons for choosing php.

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Another reason why these tools were chosen is that when the project is hosted on the server, it is easier to find servers that support php and MySQL than the other tools, even if they are paid. Compared to asp.net, php is a free programming language that does not need to pay for a license to use it, just as there are different free IDEs (Integrated Development Environment) to implement the web application. SublimeText will be used in the coding of the project.

After having carried out the analysis and modeling of each of the system requirements, the design stage continues and Rogger (2010) indicates that "Software design groups together the set of principles, concepts and practices that lead to the development of a high quality system or product. " However, in this second phase, some analysed data were improved, such as the way to store the information, the data that is requested from students or parents. It is important to mention that a good analysis and a good design lead to the development of the system with lower costs.

For the design phase, CASE tools (Computer Aided Software Engineering) were used to generate diagrams of sequences, status, database model and low resolution screens. The tools used in this phase were DIA, SQL Power Architect and Balsamiq Mockups. Figure 1.1 shows part of the database model.

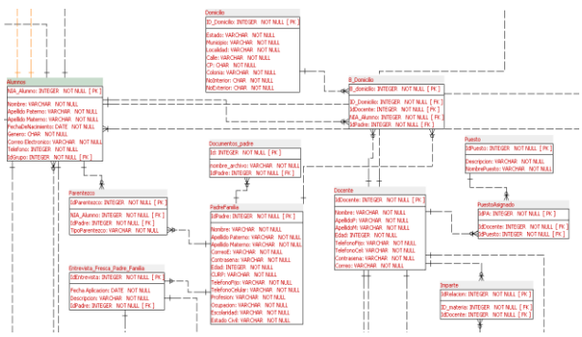

Figure 1 Database model
Source: Own elaboration

In the third phase, which is the implementation, several iterations were carried out and some of them are briefly described below.

First iteration: main screen where you will have different components (buttons) for addressing screens, as well as a style of striking colors. Once analysing the representative colors within the application and the knowledge about HTML coding. The result of the main screen is shown below in figure 2

Figure 2 Main screen
Source: Own elaboration

Second iteration: generation of PDF files in specific reports and surveys, such as: tutorials report, individual report, failed students, etc. Once the student has answered a survey or test format, the file with a pdf extension can be generated in the browser, so that it can be downloaded and subsequently printed as many times as necessary. Figure 3 shows an example of the responses to a survey conducted on a student.

Figure 3 pdf´s report format
Source: Own elaboration

Third iteration: From manual number 1, the follow-up format for at-risk students was digitized, allowing the director to closely monitor the student and establish fluid communication with the team that will provide direct support. It will be relevant that quantitative and qualitative information on the student's performance be included in the monitoring documentation. Figure 4 shows the digital format.

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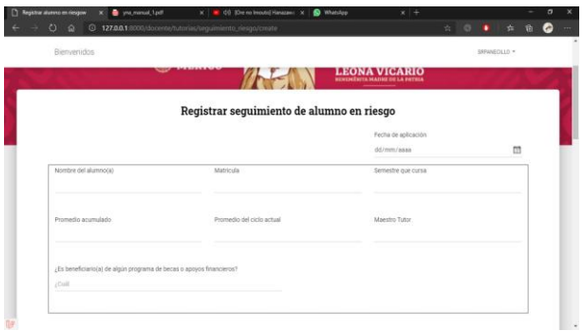

Figure 4 Monitoring of students at risk
Source: Own elaboration

Fourth iteration: a form is filled out for the detection of tutors who require individualized attention, in this format 4 factors are measured with their respective particular situations, the factors to be analysed are: health and weight, academic, psychosocial and family. Presence of visual and hearing impairment, lack of study techniques, depressive problems and family violence, are just some of the situations that occur in the different factors. Figure 5 shows the screen of this digitized format.

Figure 5 Individualized attention format
Source: Own elaboration

Fifth iteration: control of attendance at tutorials, this is filled out only when the tutored has an interview with his tutor, the tutor can carry out individual or group interviews, in case the interview is group, he must fill out the form for each student attended. In figure 6 you can see the high-fidelity screen of the attendance list.

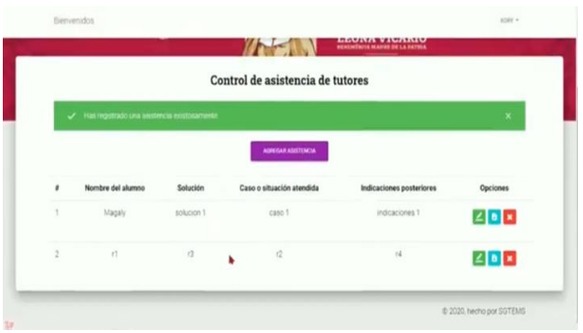

Figure 6 Attendance list
Source: Own elaboration

Results and discussion

Results obtained when implementing the web system have been satisfactory for a high school in which the system has been implemented since at the time of using it, immediate response times were obtained from the questionnaires or interviews carried out with students, as well as the control of Students who have responded to each interview are controlled by tutored groups by the group tutor. Additionally, paper consumption has been reduced since now everything is carried out in digital, allowing almost instantaneous consultation of the information collected, since previously to consult certain information, the times exceeded 20 or 30 minutes in searching each student file. This system can be implemented in other state high schools that have the same tutoring program.

Acknowledgment

To Tecnológico Nacional de México campus San Martín Texmelucan for promoting research in the area of computational systems.

To Bachillerato General Oficial “Prof. Ignacia Islas” for their collaboration and active participation in this Project.

Conclusions

The web system allows managing the information obtained from students, teachers, parents, subjects, groups, homes, positions and supporting the tutorial work by following up on the "fresh interview" by the high school "Prof. Ignacia Islas” and “Yo no abandono” program to reduce school dropouts.

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There are other tools that are handled in the tutoring area that could be implemented in the web system such as the UNEME CAPA module which allows surveys on possible addictions such as alcoholism and drug addiction, however this module has to be worked hand in hand with the CORDE (Regional Educational Coordination) of each school section.

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University term papers during pandemic: experiences in the virtual classroom

El trabajo recepcional universitario en pandemia: vivencias en el aula virtual

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Abstract

The article explores the perceptions of the actors within their formative process, especially those they experienced in the elaboration of the protocol and of their term papers for undergraduate students, within the framework of the virtual classroom, for the COVID-19 pandemic. Thus, what they experienced in the face of the requirements imposed by the teacher, as well as the lack of methodological support and consultation by thematic expert professors, in order to comply with the objectives of the subjects and the Degree Regulations. The fundamental objective of the study was oriented to show the feelings, the obstacles, the skills developed and the challenges that have occurred when moving towards the virtual modality of the students and the achievement of their reception work. The applied methodology was the content analysis with mixed design and with the support of a questionnaire applied to the actors, which allowed the systematization to graph. First-hand evidence is provided to decision makers for methodological improvements, including what is required, effort and continuity of work that contributes to the quality indicators of undergraduate programs.

Feeling before changes, Significant obstacles, Developed competencies, Challenges towards a training process

Resumen

El artículo explora las percepciones de los actores dentro de su proceso formativo, en especial de lo experimentado en la elaboración de la propuesta de investigación dentro del aula virtual, por efectos de la pandemia COVID-19. De lo experimentado frente los requerimientos impuestos por el mismo docente, como de la falta de un acompañamiento metodológico y de la consulta de profesores expertos temáticos. Con la finalidad de que se pudieran dar cumplimiento a los objetivos de las asignaturas y del mismo Reglamento de Titulación. El objetivo fundamental del estudio se orientó a evidenciar el sentir, los obstáculos, las competencias desarrolladas y los retos que se tuvieron que producir al transitar hacia la modalidad virtual de los estudiantes y al logro del trabajo recepcional. La metodología aplicada fue el análisis de contenidos, con diseño mixto y con apoyo de un cuestionario aplicado a los actores de esta modalidad, lo que permitió la sistematización y graficar. Se contribuye con evidencias de primera mano para los tomadores de decisiones para mejoras metodológicas, entre lo exigible, esfuerzo y de continuidad de los trabajos que contribuya a los indicadores de calidad de la eficiencia terminal de licenciatura.

Sentir ante los cambios, Obstáculos reveladores, Competencias desarrolladas, Retos hacia un proceso formativo

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Introduction

On April 17, the National Association of Universities and Higher Education Institutions (ANUIES) in México, presented and made its own the document that synthesized the vision of the State Department of Higher Education (SEP), the document called "Responses of Public Institutions of Higher Education in Mexico to face the Covid-19 crisis" (ANUIES, 2020). This document communicated the actions to be implemented in terms of: 1) support to health authorities and assistance to the population; 2) continuity of the substantive functions of Higher Education Institutions (teaching, research and dissemination of culture) with the support of a wide range of technological tools, and 3) a tentative scheme to promote an ambitious project to link with the productive sectors to detonate potential of local economies.

The problem being studied derives from the abrupt change experienced due to the ignorance of regulations, content, methodological aspects, and the improvisation of new teacher assignments in the subjects, causing inconsistencies, lack of support and communication with the students of Seminary I and Seminary II subjects, which led to conflicts with students and teachers

The thematic importance focuses on the reflection on the epidemiological situation that the Juárez Autonomous University of Tabasco (UJAT) is facing as an institution of higher education. The transition from the classroom space to the virtual classroom and the new challenges that must be faced by students, teachers and administrative authorities are analyzed.

This paper presents the problems faced by educational actors at a higher level; it seeks to show the feelings of the actors from the stage of the training and accompaniment process in the elaboration of a term paper as an option to get the degree in undergraduate programs.

As foundations in the University, let us consider the transition from the face-to-face classroom to the virtual one due to the contingency of Covid19, which reason for using of online platforms since 2020, this undoubtedly marks a precedent in higher education for our pedagogical practices and in the application of current educational systems.

It is undeniable that the social and economic inequalities that have stroke the educational attention of students who have arisen as academic victims of this pandemic. The need and urgency that arose from the current health emergency, made the federal and state government authorities close the doors of educational institutions as a measure to mitigate the effects of the pandemic, as stated by international organizations "has been affected 94% of students worldwide" (UNESCO, 2020).

As Amuchástegui, and Renna (2020) well assert "the flame of education cannot be extinguished and even in this context of extreme emergency, it must be guaranteed as a fundamental human right".

The challenge in these last months of confinement, in the UJAT's Business School, is to direct efforts towards a process of modernization of the school and administrative systems, which should allow with efficiency and quality to provide both administrative and teaching services without expose the university community, resorting to the use and improvement of information and communication technologies to interact effectively with the university community.

Regarding the transition to the virtual classroom, the UJAT Rector (Narváes, 2021), highlighted in his report the alliance with the Microsoft Teams company, through which it has allowed to host 8,167 online classrooms, where more than 42 thousand students were taking classes during the confinement. To know the perception of students about the sudden way of receiving classes, the need arises to investigate the perception of them and their achievements.

Harden and Crosby (2020) propose new roles for faculty, and ther are described in table 1.

Provide Support				
In the accompaniment		**In the learning**		
Evaluation Process	**Evaluator**	**Facilitator**	**Model**	Virtual Classroom
	Of the students	In the accompaniment	Hybrid	
	Self-Evaluator	In Learning	Virtual	
Experience	Curriculum Planner	Educational Resources Generator	I.nformation provider	Expertise
Teacher Virtual	Of the subject	Study guides	Master Classes	Classroom
		Teaching material generator	Supports audiovisual	Virtual

Element Producer

Table 1 *Faculty functions in virtual* rooms
Source: Adapted from (Harden,Crosby, 2020, p323) New roles in teaching

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The table shows the six stages that must be taken into consideration in relation to the functions that a university professor must perform under the current circumstances, of emigrating from the physical classroom to the virtual room. First, we must be aware that this is a new way of teaching at the university level where the virtual is considered as a reference towards the development of the dynamics of the teaching-learning process. Secondly, referring to the virtual classroom expertise; thirdly, a strong focus on being the producer of the elements that our educational resources provide; and fourthly, the need to develop virtual teaching expertise as a planner and coordinator of the subject; in addition to being aware of the evaluative process both for students, as well as self-evaluation of the curricular application; Finally, perhaps the most important part of the process of providing support, accompaniment in learning.

Identified Academic Problem

Based on the survey inquiry carried out in the first school year of moving from the classroom space to the virtual space (March-June 2020), on the situation that the Business School (DACEA) is going through, the first referenced data provided by the students was accessed. students and teachers, on the learning conditions experienced, which allows the sustenance and the bases to deepen in the lived experience.

Let us detail the first data obtained, clearing up that it was not a change in the study modality, it was an emerging adjustment to it due to the prevailing health context, where the use of information and communication technologies was decided. However, due to the abruptness of the change, certain circumstances were experienced, perhaps due to:

- Ignorance of online class regulations and methodology.
- Lack of content resources.
- Improvisation, which has caused inconsistencies.
- Lack of support and communication with the students.

Those features affected the teaching process of the subjects like Seminar I and Seminar II, which led to conflicts with students and teachers, while researching and structuring their term papers required on these subjects.

In addition to the fact that under the current circumstances, fulfilling the requirement of trust and connection with the different productive entities for the adequate gathering of the information has become difficult, so the validity of the research to get a satisfactory paper review has become a problem for students. This situation led some of team to leave the courses.

The most immediate impact on students has been the temporary closure of face-to-face activities in the Business school, particularly of those who are coursing the last school cycles and who are about to finish by carrying out a term paper review and publication to obtain a university degree. This situation must be addressed and rethought through strategies aimed at methodological support by specialist professors in their area of knowledge.

In relation to the faculty, it currently experiences important changes and the effects of moving from the face-to-face classroom to the virtual classroom, in addition to the low hiring of temporary part time professors, that directly affects the academic assignments of part-time teachers and full-time teachers, by assigning them subjects out from the knowledge area. On the other hand, the most evident impact continues to be the expectation of the continuity of the teaching activity under the virtual modality.

Regarding the object of study, in the first survey carried out, the curriculum established that students in school must course two subjects focused on the outline and the development of term paper according to the selected modality, the compliance of this the degree regulation was analyzed. The following situations were detected under the survey of the participating actors:

ISSN-2531-2952

Students	Teachers
- Due to the situation of going to the virtual classroom, it was improvised in the didactic planning. - They stated that they were taught the subjects by professors from other fields of knowledge outside the economic and administrative sciences	- Assignment of these subjects for the first time, due to administrative situations. - It was improvised in the structure of the research proposals due to the situation, not being in accordance with the regulations and methodological structure.

Table 2 Detected problems
Source: Taken from the survey answers given by faculty and students on October 2020.

Shows the approach to the problematic situations currently faced by both the students and the faculty who teach these subjects. It is highlighted the assignment of professors with other academic studies outside of the economic-administrative sciences, which brought conflict and the students course withdrawal, as well as the assignment of professors for the first time, which caused improvisation and did not consider continuity as a strategy which ensures significant progress towards students' graduation.

According to ANUIES, "of the total number of young people who start an undergraduate program in Mexico, only 50% finish and get the degree, and this percentage varies depending on the support regime of the educational institution" (ANUIES-Diagnosis,2009-2020. pp.38-42)

Objectives

The main objective of the study was oriented to identify the feelings, obstacles, developed competences and challenges that have occurred when moving towards the virtual modality of the students towards the achievement of a reception work.

The following specific objectives were set:

To know the perception of students about the knowledge constructed through the teaching orientation towards the preparation of the term paper and their experience in the virtual classroom.

Describe the factors that influenced the teachers' performance during their interaction towards tutoring students to write their term papers, as well as their perception of the experience.

Relevance

This research is based on stating the practice of both students and faculty in compliance with developing a term paper that allows them to present, support and obtain the university degree in times of confinement through interaction in the virtual classroom.

This raises challenges focused on complying with the support and orientation of the possible qualification of the students for term paper development. The experience obtained based on these types of studies, allows us to review and analyze the study phenomena and the way they are developing from the perspective of the actors, the performance of these subjects, the didactic intervention and interaction of the teachers and, of course, what difficulties the student faces.

This prevailing situation creates a scenario to externalize leadership, creativity, and innovative capacity as faculty, to create new learning environments for students and thus guarantee the continuity of the methodological accompaniment process with the support of expert professors in the knowledge area.

Literature review

Regarding the conceptual theoretical foundation, let's start by citing the following scholars who have evidenced referential data such as Lloyd (2020. pp.115-121) "… provides recent data showing that not all students are in a position to comply with their school duties and concludes that the historical inequity in the Mexican Educational System is exacerbated by this rapid migration of courses".

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On the other hand (Mendoza, 2020. pp.92-102) "... warns that the budget for higher education, channeled through publicly supported universities, especially large federal universities, has been in a virtual freeze". He also recognizes that the cuts implemented by the denominated government of the fourth transformation were already affecting the education sector when the pandemic struck and severe budget cuts were ordered, which does not herald opportunities for growth in a post-Covid environment of economic recession.

It should be noted that at this time Higher Education Institutions are in an unprecedented situation of vocational training education, since it has been easy to find recent references that support better-founded decision-making. However (Barrón, 2020. pp.66-74) gives an account of the experience at National Autonomous University from Mexico (UNAM) and highlights agreements that could guarantee and maintain an operational minimum. However, UNAM does not personify the operating regularity of Mexican higher education; in fact, it is rather the exception, and these experiences, undoubtedly inspiring, are difficult to replicate in smaller HEIs, with other purposes or operational profiles.

Under this new normality experienced in higher education, we are obliged to transcribe the following conceptualization:

How is the virtual classroom conceived?

As a didactic strategy in a world transformed by COVID-19, with educational purposes that allows managing all the characteristic activities of teaching and learning of a subject or course (García Aretio, 2020. pp. 22-37)

Regarding the didactic strategy, understood as mediated by information and communication technologies, for the virtualization of the teaching-learning process (Sánchez, Olmos, García, 2017. pp. 73-92)

In relation to digital transformation, such as technological adaptation to provide access to data and networks, as well as to conduct videoconferences, using collaboration tools and cloud services (Anscombe, 2020. pp.5-10).

Regarding higher education in Covid-19, as a human right and as part of the very nature of the individual, so the State has the duty to make education available to all (Contreras, Cortina, Saint, 2021. pp. 1-23).

Research method

Intending to detail the experiences of both students and university faculty in the process of transition to the virtual classroom and specifically regarding the subjects where the student has to elaborate their outline and then continue with the development of their term paper, two questionnaires were developed, the first of 13 questions for students and the second of 16 for teachers, seeking to inquire about the following aspects:

Students' perception

Analysis category

1. Toward developing a term paper.

Definition	Work strategy
Proper use of an analytical and explanatory document in which students express a particular vision on a topic, present ideas, reflections, and points of view	• Formative sense of the document • Basic criteria of the paper • Characteristics for its elaboration • Paper examples.

2. Curriculum and degree regulations

Definition	Work strategy
Understanding of the bases and general criteria that regulate the degree processes and compliance with the programs of the Seminar I and II subjects	• Regulatory dominance was shown • Subject knowledge Review and revision

3. Features and paper requirements

Definition	Work strategy
It showed information about the stages of the process, its elements and guidelines for writing, correcting according to the APA format.	• Standards-Supported Exemplification • Indications to be subject to the rules • Ways of information collection • Indications on the research systematization

4. Effects perceived by students

Definition	Work strategy
Perception that students of Seminary I and II subjects have regarding their transition in them.	• Course approach. • Interaction between teacher and students.

Table 3 Categories definition, and work strategy for and work strategy for students

Faculty Perception

Analysis category

1. Virtual classroom experience

Definition	Work strategy
Reserved space for the exclusive use of teachers and students enrolled in a subject that enables the development of the learning process.	• Poor exercise for students • It takes time and dedication • Development of skills in the management of the platform • Poor quality of services

2. Subject assignment to professors

Definition	Work strategy
Time distributed in class periods that the teacher dedicates to the direct attention of his students in pedagogical activities	• Assignments without considering the educational trajectory • Assigned subjects, without previous experience • Conflict with the new subjects • Application of learning strategies

3. Teacher's perception on the experience

Definition	Work strategy
Space that implies a change of perspective on the classroom.	• Difficulties • Achievements • Frustration • Effects of lack of continuity

4. Methodological support and tutoring

Definition	Work strategy
Sum of actions that during a certain time and generally of a tutoring nature is carried out to advise	• Improvement strategies • Benefits of having thematic advisory professors • Benefits of making a paper outline • Contribution of reception work

Table 4 Categories, definition, and work strategy about faculty perception
Source: selfmade by Researchers

Most questions were multiple-choice (13 for students and 16 for teachers) that required a numerical response, while 12 questions were open-ended that served as an analytical basis to be integrated into the quantitative results (6 toward students and 6 towards teachers).

The considered criteria for the structure and application of the opinion questionnaires was through the online survey platform Google Forms and the invitation to participate was distributed among professors of Seminar I and II subjects and students who have taken these subjects in 2020 and first semester of 2021, taking as support the email directory of the Microsoft Teams platform that is currently used at the institution.

The survey was available in the platform from March 4 to April 20, of 2021. 20 questionnaires were answered with responses from the teachers who have participated in these subjects corresponding to the both semesters of 2020, and the first semester of 2021; 193 students were also surveyed, giving a total of 213 participations.

Students			
Analysis Scope	Multiple choice questions	Open-ended questions	Participants
Guidance for the preparation of the term paper	4	2	193
Knowledge of regulations and Curriculum	3	1	
Characteristics of the production process	4	1	
Perceived effects	2	2	
TOTAL	13	6	193
Faculty			
Analysis Scope	Multiple choice questions	Open-ended questions	Participants
Virtual classroom experience	4	1	20
Academic assignments effect	4	2	
Teacher perception facing the virtual classroom	4	2	
Methodological and advisory support	4	1	
TOTALES	16	6	20

Table 5 Scope of analysis, number of questions and participants
Source: Survey results applied in October-November 2020 and May- June 2021

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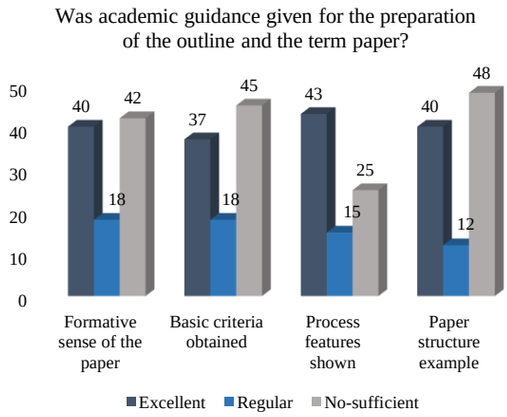
The table shows the scope of analysis considered in the applied questionnaires and the number of questions. The sample considered was made up of 193 students who participated corresponding to the second school semester of 2020 and the first semester 2021 of Seminar I and II subjects, as well of 10 research professors who have taught these subjects, as well as 10 who have been assigned to them lately. Let us start from the premise, as they affirm (Zubillaga, Gortazar, 2020, pp.23.27), that distance education implies the planning and design of online teaching and learning experiences. However, the speed with which higher education institutions had to adopt the measure of closing classrooms did not leave a chance to carry out these tasks.

Results

The results obtained based on the application of the survey are as follows:

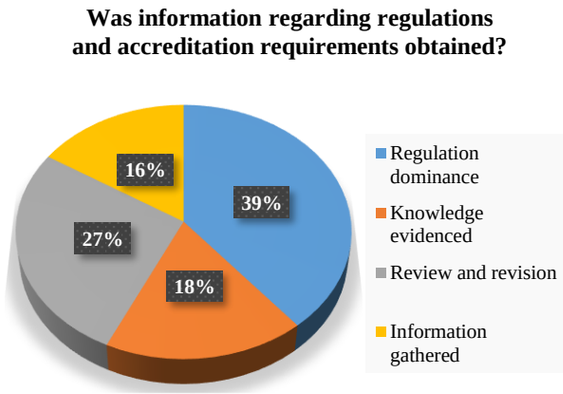


Graphic 1 Academic orientation
Source: Results, applied survey 2020 and 2021

As shown in figure 1, the sum between excellent and regular 58% was given an informative and adequate sense on the basic criteria on the formative aspect of developing both the protocol and the reception work, however, a 42% made it clear that this didactic sense was not obtained for the preparation of said documents. Regarding whether basic criteria were obtained for choosing the topic, 45% made it clear that they were insufficient against 55% between excellent and fair. Only 45% of the teachers complied with giving the essential characteristics of the process in accordance with the regulations and it is noted that 48% of the teachers did not exemplify the structure of the paper and did not present it.

The data for the figure were taken from the results of the application of the questionnaires in the months of March - April 2021.

Category: Knowledge of regulations and curriculum

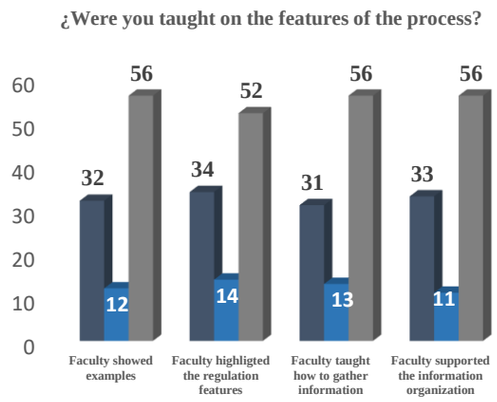


Graphic 2 Information given by the professors
Source: Results, applied survey 2020 and 2021

Regarding the information that teachers must provide during the development of their activities, the students emphasized that only 39% showed mastery of the current normative aspects of the school regulations, 27% proceeded during the school year to make periodic reviews in the virtual classroom, which served as the observations that they made to the reinforcement companions for our work, which allowed a learning process.

From the opinion of the students, only 18% of the teachers demonstrated full knowledge of the subjects, which from their point of view caused improvisation to develop both the protocol and the degree seminar. In relation to providing information of normative interest and compliance, 16% students stated that only a few teachers had this knowledge capacity since they have been the ones who have traditionally been teaching these subjects. The data for the figure were taken from the results of the application of the questionnaires in the months of March - April 2021.

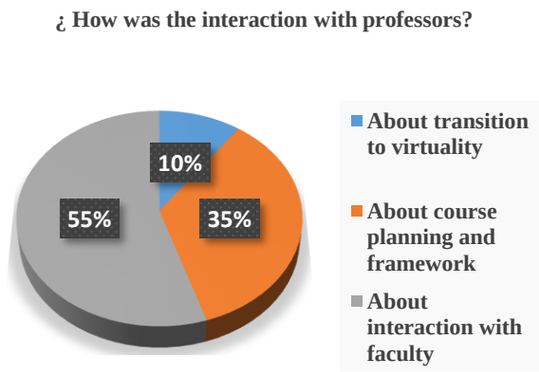
Category: Outlining features of the term paper



Graphic 3 *Process features*
Source: Results, applied survey 2020 and 2021

As can be clearly seen in the figure 3, the results were constant with slight variations: the constant prevailing between 52% to 56% that most of teachers of these subjects did not show interest in supporting, and that it also called the attention that they had phD from other areas of knowledge (Biologist, Social Anthropologist, Lawyers). The second constant was reflected between 31% to 34%, where students expressed their satisfaction about the characteristics that they should have during the process of outlining their documents, where by open question they stated that the experience of teachers in the area of knowledge was detected of administrative economic sciences and that was most useful to them at the time of delimiting the literature review. Finally, a constant of 11% to 14% of students stated that there were teachers who poorly instructed, showing a clear improvisation and many classmates also left the course due to the troubles with teachers. The data for the figure were taken from the results of the application of the questionnaires in the months of March - April 2021.

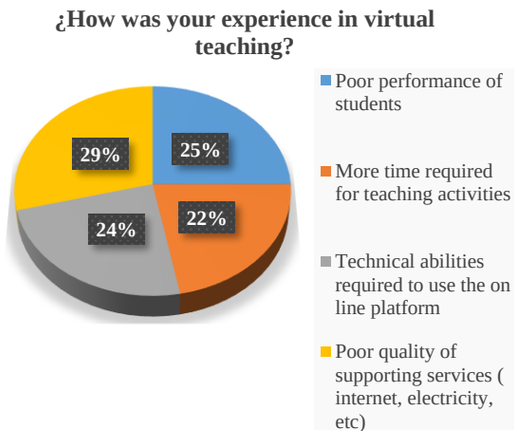
Category: Perceived effects by students



Graphic 4 Students Perception
Source: Results, applied survey 2020 and 2021

Responses from the students shown in figure 4, conclude that 55% of the opinions of the students were approached as bad and unpleasant by the interaction with some faculty members, in an open question they communicate that they are the teachers that their position from the beginning of the course is to be opposite to the previously elaborated approaches of the 35% outline, for them everything that comes from another teacher is poorly planned and only their opinion prevails, which has led to direct conflict with the students. 10% showed that the transition from the virtuality has affected certain teachers and more of those who commented that they had never taught these subjects. The data for the figure were taken from the results of the application of the questionnaires in the months of March - April 2021.

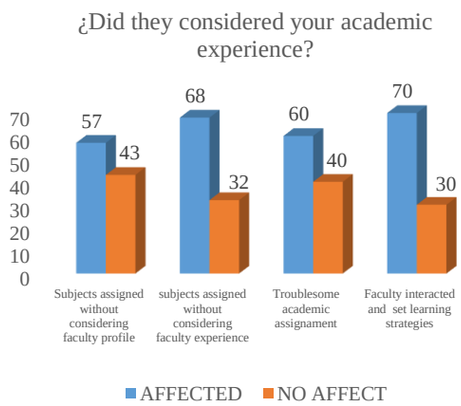
Faculty opinion



Graphic 5 *Online classes*
Source: Results, applied survey 2020 and 2021

You can see what is expressed by teachers in figure 5, where 29% stand out in relation to the poor quality they have experienced in services (internet, electricity and the lack of computer equipment), 25% are focused on the fact that a precarious quality experience has been obtained for students in relation to face-to-face classes; 24% of the teacher emphasized that it is necessary to develop skills in the management of the platform according to our needs; It was finally stated by 22% that this system has required the investment of more time than in the classes in front of the classroom, which has caused stress and physical exhaustion due to spending many hours sitting in front of the computer equipment. The data for the figure were taken from the results of the application of the questionnaires in the months of March - April 2021.

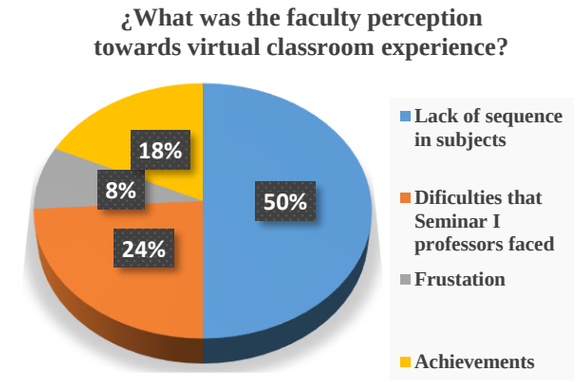
Category: Effect of academic assignments



Graphic 6 Academic assignments effects
Source: Results, applied survey 2020 and 2021

Regarding the academic assignments after emigrating to virtual classroom, 57% of the teachers made it clear that the new academic assignments were not considered the previous faculty profile, which caused troublesome situations, 43% said it was correct. This caused that 68% faced the school officers. The teachers in 60% stated that this had consequences in the interaction with the students. So, 70% had to apply new strategies applied to the virtual classroom. The data for the figure were taken from the results of the application of the questionnaires in the months of March - April 2021.

Category: Faculty perception on the experience

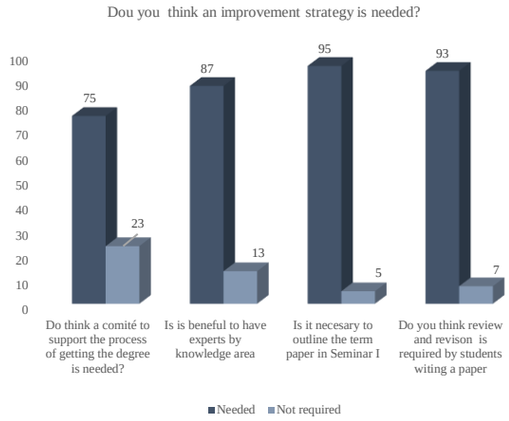


Graphic 7 Faculty perception toward virtual classroom
Source: Results, applied survey 2020 and 2021

As it can be seen in the data obtained, 50% stand out that participants consider the continuity of teacher-students within the academic planning and assignment to guarantee the greatest number of reception assignments with low results. In relation to the difficulties of the seminary I professor in 24%, it is related in the fact they were assigned for the first time. In the sense of the achievements obtained, 18%, were by teachers who did achieve continuity, although not with the entire previous group, it was possible to support in being able to integrate work proposals with a significant advance that ranged from 70 to 85%. Regarding the frustrations experienced, 8% refer in two senses, the first one that was experienced by the teachers who did achieve continuity but who inherited protocols elaborated due to lack of methodological experience and the most worrying thing was the lack of knowledge of the degree regulations, Since when reviewing these proposals, 5 and up to 7 students came as participants when the regulation only accepts works by couples. The data for the figure were taken from the results of the application of the questionnaires in the months of March - April 2021.

ISSN-2531-2952

Category: About the Methodological support and expertise of teachers



Graphic 8 Elements to improve
Source: Results, applied survey 2020 and 2021

According to the observed results, 95% consider that it would be beneficial for the business school to consider the presentation of the protocols beneficial and thus avoid bad comments and devaluation of teaching work, such as recognition of student effort. Likewise, it would be for the case of the presentation of those works that report significant progress more than 80% with specialist teachers of their activity of economic-administrative sciences, which could contribute to raising the indicator of the degree for reception work. Regarding the consideration of having the support of specialist experts by subject area in 87% as beneficial for the process and finally with 75% they believed that it would be good if the DACEA authorities implemented a strategy of aspects susceptible to improvement

Discussion

From the students' perspective, there are teachers who do not have the experience and profile to help them in their purposes, if this continues, the lack of leadership in the virtual classroom of some professors will worsen and with this they will continue to cause the temporary withdrawal of students. students, who will complicate their degree and delay in their graduation. If there is no logical continuity of the teacher who achieves his purpose with the students, this will undoubtedly continue to affect the possibility of accompaniment and support of having tutorials from specialist experts in knowledge area. Despite this, a percentage of students said the virtual classroom was an alternative for those who could have continuity.

Faculty generated contradictory feelings due to the imposition of subjects by those responsible for carrying out the academic assignments, which led them to improvisation and non-compliance with the rules and that they only relied on improvisation to give results, the concern lies in them that If the assignments continue in this way, they may change each school year to other subjects that require teachers not subject matter experts to contribute to results, which worries them. They detected that many students are not interested in doing term paper, since they consider other degree options; however, the conflict that occurs in these subjects is that they are in school and must comply with the elaboration of the outline and then finish their research work 100% to accredit them. Within the framework of this uncertainty, let us cite (García Aretio, 2020. pp.22-37) "… the foundations to build the bridge between "should be" and "be", between theory and practice, are traced within the theory itself. Knowledge is transcendent (with respect to the world of objects, with respect to reality) not only in an epistemological sense, but above all insofar as it goes against the repressive forces of life: it is political.

Conclusion

Virtual education at the University, looking towards a future perspective, we know that it is the immediate solution due to the aspects of continuing in contingency and that we must consider its possible continuity or to visualize its use in a mixed way (face-to-face-virtual) , from the perspective of the study subjects, who considered that the interaction in relation to the virtuality had not been adequate, since in most cases there were inconveniences both in the management of technological devices and of the platform itself , since in most of the occasions there were inconveniences in the technological devices, their speed and of course the access to connectivity, Another factor that must be considered and analyzed in our students is the preponderant factor of the economic for the acquisition of electronic devices , such as: laptops, cell phones, tablets, even when hiring fixed internet for the first time and mobile data, failing which several students will opt for the temporary withdrawal. In this context, the external (ECLAC, 2020) "the obstacles that have been faced have been diverse, including low connectivity, access to and use of technologies, the alteration of family life and daily life or the socioeconomic factors of households".

ISSN-2531-2952

Other students stated that they did not find improvement in obtaining knowledge and accompaniment by specialists on topics specific to our area of knowledge, although we consider that this varies indisputably depending about each student; It is shared to have had technological troubles, but it was more in the aspect of some teachers where negative feelings such as sadness, frustration, anger, discouragement, stress, and anxiety developed.

Finally, it is concluded that to be able to achieve quality reception work that contributes to undergraduate program efficiency in our area of knowledge, we must understand that our students must be the center of learning, with interaction with leadership and the proposal can be considered. called "Methodological support and specialist teachers of our area of knowledge" towards the achievement of term paper that tends to be the most suitable option at this pandemic moment to obtain the degree.

According to (Fueyo Hernández, 2019. p14), "it is necessary to carry out an analysis within the universities, and in all the educational programs they offer, on the situations experienced by students and teachers".

If we agree that the structure and preparation of a term paper at the University must agree with the purposes of initial training and with the professional profile defined in the study plans and in relation to the Institutional Development Plan (UJAT, 2020. p .13.) Where it specifies "… they recognize the University as the space for training citizens and future professionals, where the opportunity to infuse new paradigms that allow overcoming the problems that afflict society persists. To this end, it is necessary to make substantial changes in the curricular, regulatory, administrative, organizational aspects and, above all, of ethical behavior".

In support of what has been described, it must be emphasized that they are university students of the economic and administrative sciences and not researchers, who are completing their comprehensive training and supported by a professional profile defined in the business school curriculum. This approach does not devalue term paper, but we must fix it to realistic parameters to this new reality that is being faced.

The idea of that we must disseminate and promote term paper as a product of the training of our degrees, where we focus on the culmination of their professional training. Let us consider, the promotion of term paper and to sustain it, becomes a final demonstration of competence.

Therefore, it is necessary to reconsider the following question towards the immediate future: How do our students of the economic and administrative sciences link that knowledge acquired during their professional training, with the appropriate professional support and tutoring for term paper? Schematically, the following aspects are proposed for improvement to be considered, which can be the support of analysis for the decision makers of the university.

Consult	⟷	**Implement the context of graduation to contribute to comprehensive and quality training.**	
Students Faculty	⟷	Identify difficulties	**Support and assessment**
To identify	⟷	Analyze difficulties	
The factors that influence the selection of the graduating strategy	⟷	Assess difficulties	
	⟷	Deal with Difficulties	**Graduating committe**

Table 6 Guidance for Quality Management
Source: Own elaboration, considering the regulations of the UJAT

The figure 6 shows, the proposed process to be implemented in Quality Management towards the context of graduating sudents from the business school, with support to its mission regarding the UJAT as the highest institution of higher education in the State, has been transformed to position itself as an institution with academic quality that responds to new realities. Taken from the certification process for ISO 9001: 2015 focused on improving performance, guaranteeing quality and managing risks and the Regulation of Qualification of the curriculum of Bachelor's Degree and Higher University Technician.

ISSN-2531-2952

Graduating regulations		
Requirements	**Scope of methodological**	**Procedures and support**
Professors experts in administrative and economics sciences	Operation	Assignment of teachers sequentially to guarantee product.
Accredit the training of the methodological support and the APA format	Graduating officers and graduating committee	
Unification of criteria of teachers attached to the regulations and subjects	Planning Directing Evaluation	Presentation of outlines for the assignment
Sequential rearrangement of subjects in support of graduating process	Improvement aspects ASM	Efficient support towards graduating process by the different modalities
	Support and dissemination processes	Formalize the presentation outlines for teachers according to their academic degree

Table 7 Proposal to improve the methodological support process.
Source: Own elaboration, considering the regulations of the UJAT

What is detailed in the graph represents a related proposal on the methodological accompaniment process, which must be implemented for the benefit of the students, according to the fulfillment of the subjects that are directed towards the preparation of a reception work, considering for such purposes the sequential rearrangement of the subjects and the criteria that must be applied in the assignment and continuity of the teacher in order to obtain results and contribute to terminal efficiency with proposals for reception work.

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Computer system for process optimization. Practical case of a religious organization

Sistema informático para la optimización de procesos. Caso práctico de una organización religiosa

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Abstract

Thanks to technological advances, companies currently have computer systems and database systems for better administration of their organizations. However, in some of them there is a phenomenon in which they are not managed by computer systems, but by manual processes keeping their records on sheets of paper, which represents a large amount of time and money consumption, this system has deficiencies, both for the organization and for the personnel who have access to said process. Due to this problem, the design and implementation of a computer system is proposed using the agile Kanban methodology, which was used for its flexibility to avoid problems and bottlenecks between the activities of each iteration, also for the development of the system used the VB.Net programming language and the Microsoft SQL Server manager for the construction of the data model. Resulting in an efficient computer system in the control of records of the different services that a religious organization provides to its parishioners.

Computer system, Kanban methodology, processes

Resumen

Gracias al avance tecnológico, actualmente las empresas ya cuentan con sistemas informáticos y sistemas de bases de datos para una mejor administración de sus organizaciones. Sin embargo, en algunas de ellas se presenta un fenómeno en el cual no están administradas por sistemas computacionales, sino por procesos manuales llevando sus registros en hojas de papel lo que representa una gran cantidad de consumo de tiempo y dinero, este sistema presenta deficiencias, tanto para la organización como para el personal que tiene acceso a dicho proceso. A causa de esta problemática es que se propone el diseño e implementación de un sistema informático mediante la metodología ágil Kanban, la cual fue empleada por su flexibilidad para evitar problemas y cuellos de botella entre las actividades de cada iteración, asimismo, para el desarrollo del sistema se usó el lenguaje de programación VB.Net y el manejador Microsoft SQL Server para la construcción del modelo de datos. Dando como resultado un sistema informático eficiente en el control de registros de los diferentes servicios que proporciona a sus feligreses una organización religiosa.

Sistema Informático, Metodología Kanban, Procesos

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Introduction

The great technological developments are indisputably transforming the way of doing things, as well as the way of providing support and new services to the management of current organizations, in this way information and communication technologies (ICT) have become in a relevant factor so that companies can be productive and efficient in their various processes (Bocanegra and Vázquez, 2010).

For Gálvez, Riascos and Contreras (2014), information and communication technologies (ICT) have become a catalyst for organizational processes that allow the improvement and optimization of each of the business processes in an appropriate and timely manner. In this way, according to Pérez and Dressler (2007), organizations are committed by two interrelated aspects: the first resides in the intensive and rational use of ICT that allows creating value for the organization and favors the second aspect, knowledge, resource fundamental of organizations.

Among the most prominent emerging technologies are those related to integrated wireless devices, service-oriented architecture and application infrastructures (Samad, McLaughlin and Lu, 2007). This type of technological development being one of the ways to satisfy the needs of the most sophisticated and demanding clients in the market, in addition to allowing the automation of various processes within organizations, as long as the acquisition and implementation of the technologies is appropriate. for your organizational structure.

The incorporation of technology in organizations plays a very relevant role (Hirscha, Almaraz and Ríos, 2015) to improve the performance of companies in their processes and to carry out work efficiently and thus be able to respond to the increase in demand. and changes in the environment in which they operate (García, 2013).

Arregocés and Cano (2007) argue that one of the technologies most used by organizations is those incorporated into the CIM, which has allowed manufacturing processes to be more flexible and have better productivity.

According to Nagalingam and Lin (2008), CIM technology together with ICT tools are the right combination for organizations to overcome the current economic climate and the dynamic changes that markets present. The incorporation of technologies and the change that this entails, has brought about a series of positive benefits for all organizations that wish to remain current and efficient.

It is because of the above that the following work is presented, which aims to propose a computer system to improve the processes of a religious organization in an optimal and efficient way through the agile Kanban methodology.

Methodology

There are various methodologies aimed at supporting and improving processes, however, it is agile methodologies that have captured the interest of software developers, as is the case with the Kanban methodology.

The Kanban methodology was used for the development of the computer system of the present study, due to its adaptability and flexibility during the development of the software. With Kanban, developers have the opportunity to organize and manage in a general way, the way in which each of the assigned tasks are carried out, in addition to clearly showing the priority of each task (Colla, 2016).

Kanban is based on incremental development, in which work is divided into segments using a board. The board shows all the tasks to be carried out and their status, in order to avoid bottlenecks in each iteration and ensure the correct fulfillment of each of the defined tasks (Janampa, Gómez, Juárez, Lozano, Solórzano & Meneses, 2021).

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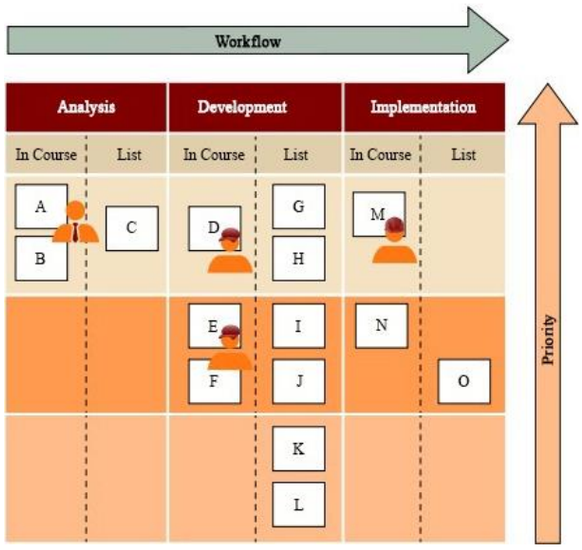

Figure 1 Kanban model
Source: Bermejo (2011)

For the development and implementation of the proposed System, the process of the Kanban methodology (Figure 1) was followed, which consisted first, with the definition and analysis of system requirements, then proceeded to collect the information that fed the system, the which was provided by the personnel in charge of the registration of the sacraments in the church. Once the information had been classified and organized, the data model was developed and built with the Microsoft SQL Server 2012 tool. While for the development of the application, Visual Studio 2017 was used as a programming language specifically VB .NET.

Construction and implementation of the system data model

Once the information obtained from the unit of analysis process was analyzed and modeled, the database was physically built through an ascending construction strategy, which begins with a detailed list of all the attributes that could be part of the data model. data. Once the list of attributes was defined, the requirements were decomposed and conceptualized independently to finally generate the data model. Figure 2 shows the database obtained from the parish process, which consisted of 12 tables for the storage, analysis and manipulation of data from the computer system.

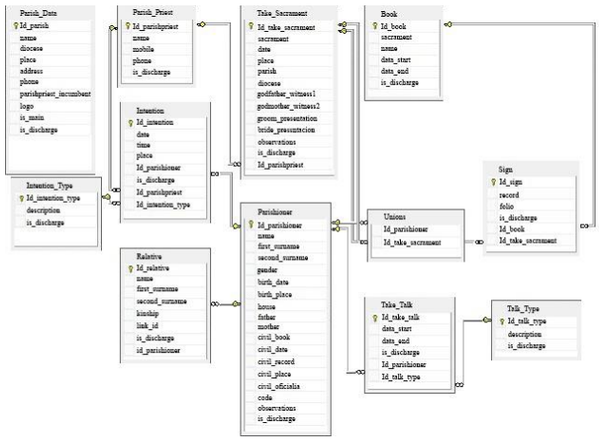

Figure 2 Parish process data model
Source: Own elaboration

Figure 3 shows the home screen of the system with all the automated actions for the registration and administration of services provided by the religious organization.

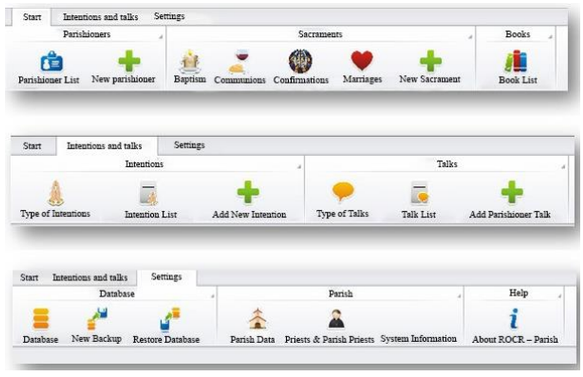

Figure 3 System main menu

To carry out the registration of the sacraments taken by the parishioners, the interface shown in Figure 4 was designed, where advanced searches can be carried out according to the unique identifier of the parishioner or full name among other functions of the registry.

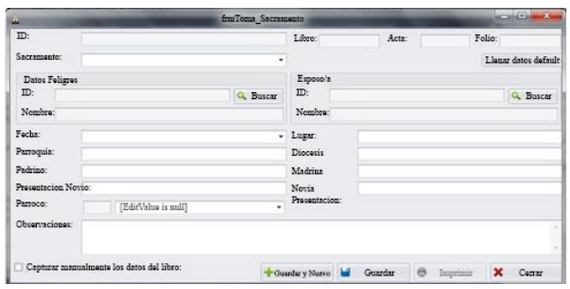

Figure 4 Sacrament Record Screen

Figure 5 shows the interface in which the user can consult, manipulate and organize the information collected from the different sacraments offered by the parish, for example, marriages.

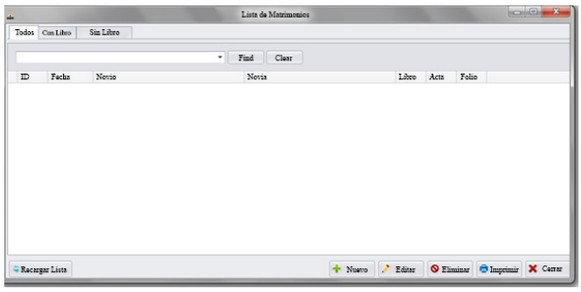

Figure 5 Information query screen (marriages)

Figure 6 shows the interface that allows recording the general information of each parish with which there is contact and collaborative work within the organization.

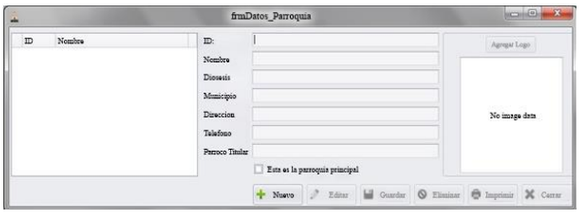

Figure 6 General parish data record

To secure the information of the computer system, two main interfaces were designed and developed to make backup copies in external and internal storage media in the organization. In these copies the information remains intact until the moment in which new files are saved (Figures 7 and 8).

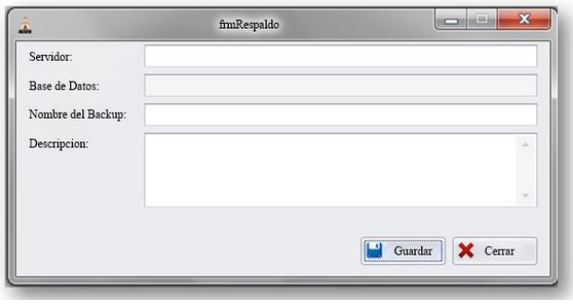

Figure 7 Database backup screen

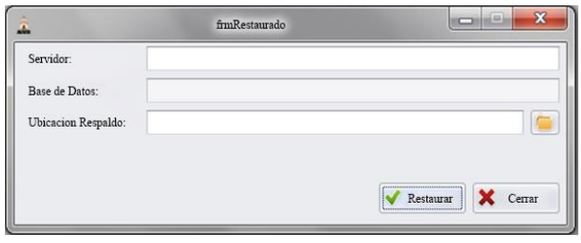

Figure 8 Database restore screen

Results

With the application of the Kanban methodology for the development of the computer system, it was possible to largely avoid bottlenecks in each iteration during its implementation, thus allowing satisfactory results to be obtained both in development, operation and test cases.

On the other hand, with the developed system, each of the services provided by the religious organization was expedited quickly and efficiently. Likewise, it was possible to have a better integrity of the information stored and managed by the processes of sacraments and intentions and talks.

Finally, through the database restore interface, the organization was able to reliably secure data backups.

Conclusions

The proposal developed and implemented in the selected analysis unit, it was possible to observe an increase in productivity in its processes, through validation tests with the end user. To mention an example in the registration of the sacrament of the first communion, a time of 20 to 30 minutes per person was taken and by means of the computer system it was reduced between 10 and 15 minutes.

Computer systems represent great quantitative and qualitative advantages in any process of interest, so the use of these is increasingly demanded by society, companies or organizations that wish to optimize their processes. Among the advantages identified after the implementation of the information system in the parish processes are:

- The proposal developed and implemented in the selected analysis unit, it was possible to observe an increase in productivity in its processes, through validation tests with the end user. To mention an example in the registration of the sacrament of the first communion, a time of 20 to 30 minutes per person was taken and by means of the computer system it was reduced between 10 and 15 minutes.

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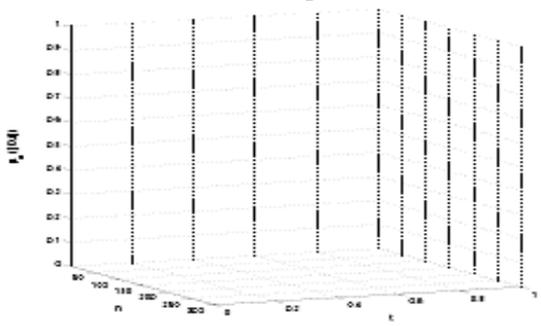

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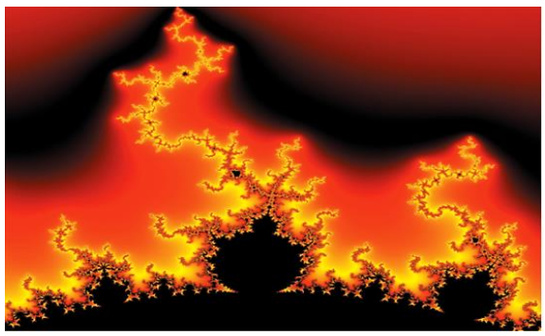

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