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## Model to Support Office Skills in Basic Education Teachers

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**Abstract:** This research was conducted to investigate the degree of office knowledge of basic education teachers of the fifth and sixth grade of the Altiplano, the State of Hidalgo, to improve the management and use of office packages in a constant way inside and outside the classroom, with the support of a model that strengthens the teachers' office skills. Participatory Action Research was used, through a quantitative approach, descriptive scope and cross-section. The results were generally positive, as most teachers agreed to improve their office skills. It was concluded that already in post-pandemic most basic education schools under study did not continue with the use of the model to generate and strengthen office knowledge, which was used during this research, the main reason is to continue to include the traditional model since most teachers depend on their union, and training times are very limited within their teaching career. Therefore, it is necessary to have a space in school calendar to resume or practice office training with the proposed model.

**Keywords:** knowledge management, office automation, basic education, information and communication technologies.

## 支持基础教育教师办公技能的模型

**摘要：**本研究旨在调查伊达尔戈州阿尔蒂普拉诺市五、六年级基础教育教师的办公知识程度，以持续改进课堂内外办公包的管理和使用，加强教师办公技能的模型的支持。通过定量方法、描述性范围和横截面，使用了参与性行动研究。结果总体上是积极的，因为大多数教师同意提高他们的办公室技能。结论是，在大流行后，大多数所研究的基础教育学校没有继续使用本研究期间使用的生成和强化办公室知识的模型，主要原因是继续包括传统模型，因为大多数教师依赖于他们的工会，在他们的教学生涯中培训时间非常有限。因此，有必要在学校日历中留出空间来恢复或练习所提出的模型的办公室培训。

**关键词：**知识管理、办公自动化、基础教育、信息和通信技术。

## 1. Introduction

The essence of this research starts with support for primary education teachers using a training model in office packages, added to the emergence of the COVID-19 pandemic. Thus, the research was enriched and the use of online educational platforms was exploited. Some authors [1] mention that pandemics have always been part of human history, intrinsically, since men and women began to organize themselves in society by creating places of coexistence in a territory, and given this, contagious diseases were very easy to spread.

The main objective was to determine the knowledge and office experiences of teachers of basic education and in parallel to share it among the same teachers gathering their experiences and previous training in office packages, even the most competent and strategically best prepared teachers were used in the management of office parcels, giving rise to a model that serves as a tool, formed in a series of study workshops with teachers from the Altiplano of the state of Hidalgo, to increase the frequency of office parcel handling in the classroom and in most basic education subjects.

The educational novelty that this model proposes is to strengthen both technology and didactics together with pedagogy; it is then an opportunity for teachers to exploit their office skills.

## 2. Literature Review

It began with conceptualizing knowledge management that is defined as a series of elements that ensure the application and development of knowledge with value in an educational entity to improve results and differentiate advantages. In this sense, knowledge management should be seen as a means of improvement for the learning teaching process [2].

The theory of knowledge [3] was used to explain the phenomenon of the creation of organizational knowledge, whose knowledge is defined as justified true belief as an essential part of research.

Nonaka and Takeuchi raised this theory in 1995, where the authors begin their argument by stating that knowledge is initially created by individuals within organizations and that it spreads throughout the organization, described through a process established by theory, it also allows the ability of a company as a whole to create new knowledge, as well as to spread it throughout the organization and to be established in products, services, and systems [4].

The practice of all educational management processes allows organizations to design improvement plans to overcome difficulties and thus better manage the adversities presented [5].

Knowledge management focuses on improving performance, innovating, and anticipating the future, while education is intended to ensure the development and incursion of knowledge into educational action;

therefore, basic education is no exception.

This is possible through periodic evaluations combined with performance evaluations of managers and teachers and institutional self-assessment processes [5].

Knowledge management is alternately viable for both private and public organizations in the sense of being able to manage both knowledge and knowledge of human resources.

Accordingly, the Ministry of Public Education, through the National Program for the Permanent Updating of Teachers in Service (PRONAP), has sought to adopt a new model for the continuing training of teachers in basic education [6].

The incursion of Information and Communication Technologies (ICT) in the educational field has become widespread in recent years. Consequently, training spaces have been expanded, new forms of interaction between students and teaching staff have been promoted, the development of more personalized teaching has been encouraged, improved communication between the various educational actors, increased possibilities for achieving social inclusion, facilitated accessibility to content and promoted multiple intelligences of students, inter alia [7].

Whenever you think about technology, you allow yourself to go further and be competent, so that better than implementing it in the educational part, however, there are still some teachers with resistance to change and they are not allowed to raise new ideas and therefore it is important to identify that the dynamics in education is also part of the proper use and management of office programs and therefore of the applications or educational programs on the internet [8].

Using computer resources can help teachers to improve the quality of teaching while at the same time providing an opportunity to make better use of the free time of their students and their learning in an active and conscious way [9].

Despite the above, it is identified that the use of ICT in Mexican homes and schools is still very unattractive and low compared to the progress they have had in developed countries [10].

Despite the development of actions such as: increasing the presence of technological means and implementing concrete plans, pedagogical dynamics are not always being transformed and as a result, several studies conclude that the introduction of ICT does not always result in a significant increase in student learning [11].

In this sense, the competences that the teacher must have must be aimed at adapting a class program that incorporates the use of technologies while students improve their skills in class [12].

In recent decades, education in Mexico has demonstrated its interest in teachers becoming involved in the use and application of ICT in their teaching

activities, since it is considered that in general priority has been shown toward activities to favor the student [13].

In relation to the goals of an educational society, which is made of constant sharing of knowledge and lifelong learning, it is therefore possible that learning to learn is an essential component when learning to be [14].

There is a large number of research relating to digital literacy, the technological gap between students and teachers, their technological preferences, and the integration of these technologies into the teaching and learning process [15].

The United Nations Educational, Scientific and Cultural Organization (UNESCO) mentions the large number of pupils lagging behind in education in times of pandemic due to lack of access to digital learning resources [16].

In the same sense, the Mexican Competitiveness Institute A.C. (IMCO) states that most students learned less in the period from 2020 to 2022, since the pandemic significantly affected education. The long-term consequences of this educational crisis are imminent since the risk is marked in this new generation of students since most of them have social and economic vulnerability and therefore faced economic barriers and suffered the most from school closures [17].

### 3. Methodology

This research was carried out with a qualitative approach because it was the most appropriate to achieve the main objective, the above, due to the inductive approach, since from the beginning it was not intended to test a previous hypothesis, the paradigm used was Participatory Action Research qualitative (IAP) to obtain reliable and useful results to improve collective situations, it is convenient to investigate the subjectivity and significance of human action, a method of analysis that helped contextualize the experiences and knowledge of teachers of basic education in the Altiplano of the state of Hidalgo was also used in parallel.

#### 3.1. Participants

Of the total of 74 basic education schools between the evening shift, such as the morning school that contemplates the Altiplano of the State of Hidalgo [18], the participation of 37 was achieved through nonprobabilistic sampling for convenience, where most of the interviews were with both the sector manager and the managers and were carried out in a virtual way. In fifth and sixth grade teachers were more involved, with teachers between 25 and 35 years old, because they have more familiarity with the use of ICTs and in the management of office packages and with certain educational platforms on the internet.

#### 3.2. Instrument

All interviews were validated using the two-round Delphi methodology, also known as modified Delphi. Through this technique, it was possible to obtain the vision of a series of previously chosen teachers on a subject from repeated rounds of questions. The coding of the interviews and the generation of code groups was done with ATLAS.Ti9 software.

#### 3.3. Procedure

Interviews were conducted on the Zoom and Google Meet platforms only in very specific cases were made via WhatsApp by video call and some interview questions were sent in PDF file and returned by teachers in audios also using the WhatsApp platform. Each teacher was assigned an alphanumeric name to identify their participation and at the same time began the filtering of their answers; finally, everything was transcribed in text files and copied to the ATLAS platform Ti9 for your validation.

### 4. Results

During the year 2021, interviews and face-to-face meetings were resumed where the times and spaces with teachers were redefined to conduct study workshops and test a re-education proposal based on a model that applies parcel management office automation with advanced functions for each program and that supports the management of knowledge in office packages among teachers and teachers at the same time share the knowledge acquired with their students in different tasks and activities relating the office parcel with their subjects.

Figures 1 and 2 show how interviews were validated and corroborated, respectively, and the process that led to the generation of office training workshops.

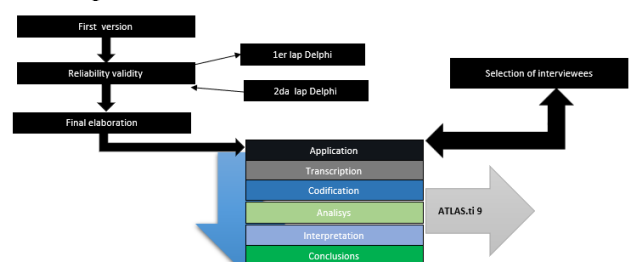


Fig. 1 Interview validation (The authors' elaboration)  
Note: The process is developed for validation.

At the beginning of the investigation, we had direct contact with most of the above-mentioned teachers and we managed to work in parallel with those who had little or no experience in the management of office parcels, since in sum these have training courses in office management, they mention that they have had both training courses since 2012.

Of the teachers who were interviewed, it was possible to generate in parallel a group of them who had more experience in the use of office automation

packages, with the intention of being able to contemplate them as knowledge guides and office automation experience to integrate them into the contemplated model.

The research continued during 2020 in a virtual way due to the suspension of activities by the pandemic as a result of COVID-19 and worked with educational platforms in network, By the end of 2021, interviews were resumed face-to-face, and work was done with teachers to refine at the same time some of their answers.

Since most teachers interviewed at the time mentioned being trained in the management and constant use of office parcels in the classroom, families of the ATLAS platform were included. Ti9, regarding the knowledge of office parcels as well as the use of online educational platforms and it was taken advantage that classes to basic education students were conducted online.

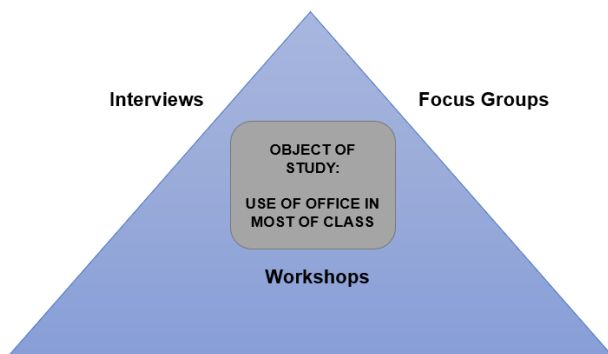


Fig. 2 Corroborating through interviews (Elaboration of the authors)

Figure 3 shows the codes that practically related to the object of study, the knowledge and constant use of office parcels in the classroom and at the same time the management of an educational platform on the internet, it can be seen that several variants were obtained mainly mothers and fathers were actually the assistants in the tasks that the student had to perform even considering that many of these did not have adequate equipment at home and less connection to the network, most were connected by cell phone and few by computers.

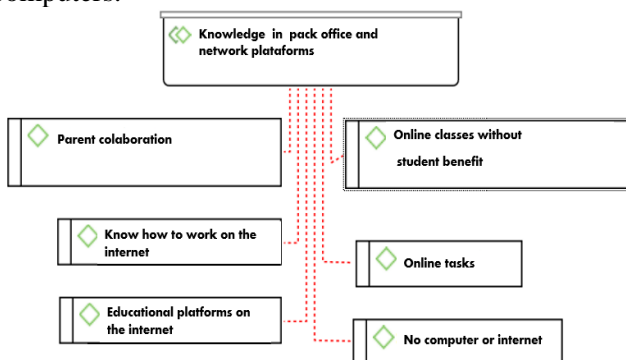


Fig. 3 Groups of codes generated for study object (The authors' elaboration based on the information collected)

supposed online teaching by the schools of the Altiplano of the state of Hidalgo, as shown in Table 1, these obstacles were in most cases due to the lack of computer equipment from the teachers to the students themselves, on the other hand, the lack of commitment on the part of the same school managers, to be able to evaluate the constancy in use of office parcels of each teacher and finally the few options that teachers had to assess the activities they left online or by WhatsApp.

Table 1 Obstacles to the correct use of ICTs (Elaboration of the authors based on the information collected)

Sector	Current conditions
Environment	<ul style="list-style-type: none"> <li>The lack of telephone lines in distant communities</li> <li>The crime that constantly steals telephone wiring in certain schools</li> </ul>
Infrastructure	<ul style="list-style-type: none"> <li>No internet service</li> <li>Not all schools have computer lab</li> <li>The lack of maintenance of computer equipment</li> </ul>
Training	<ul style="list-style-type: none"> <li>All teachers have at least six training courses in office automation packages</li> <li>Few teachers use educational platforms on a daily basis during the COVID-19 pandemic</li> </ul>

In this sense, according to the results, most of the teachers of the investigated context, only chose to continue working with messages and activities by the WhatsApp application with few advisors, which to a large extent did not make clear the subject or the task they had to perform for the students, few teachers had the possibility to establish online classes by the Zoom or Meet platform with a maximum of four hours a week (two hours class and two for review). The only thing salvageable for the tasks and activities requested was to have worked with office parcels in its vast majority only Word of Microsoft Office and in few cases with Power Point also of the parcel of Microsoft Office.

Back in the classroom, teachers did not consider implementing any strategy with online work or working more frequently within the classroom with office packages. However, they did mention the need to continue to have refresher courses or training in ICT to have more possibilities or benefits at their level.

The extension of the results obtained in this investigation will depend largely on the same primary schools of the "Altiplano del Estado de Hidalgo", which also depend on the educational institutions that coordinate in the state; however, there may be cases of success in the primary schools where the same teachers coordinate and generate workshops with the proposed model regularly.

### 5. Discussion

Basic education is one of the fundamental pillars in the cognition and affectivity of the individual, it is at this stage where teachers have a transcendental role,

Different obstacles were encountered in the

since they share more time with childhoods. With the pandemic, most teachers were struggling with ICT management, specifically office packages and online platforms, and most of them had to adapt to work online and consequently train in the management of certain platforms such as Zoom and Classroom.

The incorporation of ICT in classrooms is not simply about providing schools with this type of resources, it is necessary for the entire educational community to be able to take advantage of the didactic potential that these media offer, the work of teachers and student learning [19].

It was proposed to the sector manager and managers to train teachers intensively and continuously in advanced tools in Microsoft office packages in weekly or monthly sessions. Where it is intended that teachers change their attitude with respect to the use of office packages in the classroom and no longer only in their administrative activities and if it is possible to assess their progress in office skills and use of ICT through observation guides so that the commit to generating activities on the course agenda, as well as examples for each subject using at least three programs of the office pack on a constant basis in the classrooms. Knowing how to use digital tools means systematically integrating them into the educational process, considering the needs and particularities of different contexts.

From 1997 to 2016, several projects appeared that were not well disseminated or used mainly at the basic level, began with the project "School Network" project from 1997 to 2004, followed by "Encyclopedia" from 2004 to 2011, supplied by "Habilidades Digitales para Todos" from 2009 to 2012. It changed its name to "Mi Compu MX" from 2013 to 2014, and was again modified to "Mexico Digital" from 2013 to 2015, and finally it was updated with the project "Aprende. MX" from 2014 to 2016 during this evolution that supposedly expanded to benefit anyone no longer just students and teachers, however, the expected goals were not achieved and lagged from planning to the execution of the same projects [20].

Almost 20 years passed and the results were very poor, from the part of the constant use of ICT and finally the infrastructure was not enough in any of the stages. Instead, vandalized or at best disused computer equipment becomes obsolete, leaving a huge gap regarding the proper use of ICTs specifically in what is Office parcels.

In April 2020 as a response to the pandemic, appears "Learn at home" an emerging project made too quickly, which for a change was not enough, the innovative thing is that most of the open television stations in Mexico broadcast the content, which really lacked a sequential and structured approach in line with the reality of primary and secondary school education programs, reason why the vast majority of teachers chose to use this programming bar only for

reinforcement or for mere complement in their subjects [21].

For all of the above, the model proposed in Figure 4 can really be a tool to support the lack and constant use of office programs in primary education, since it is just the fifth grade of primary education where most students are eager for knowledge, with creativity in its splendor and with the willingness to continue learning. And that is where the basic education teacher of the Altiplano of the State of Hidalgo can apply this model and begin to progressively modify their sessions, occupying a space of their time each day with the students individually or in pairs so that at the end of the cycle most of the students are well trained and correctly use office packages.

Thus, it is expected that the model proposed in this research can be applied and depending on the characteristics and conditions of each campus will be replicated in a short time in the other campuses of the same Altiplano of the State of Hidalgo. Both the SEPH, the teachers' union and the directors of each primary school must evaluate the time and be able to give the opportunity to periodically reply to their teachers.

The model can be an alternative to reinforce and improve a little the already runaway learning situation in primary school students, especially because there is a huge backlog in commented learning and by the testimony of parents and students themselves.



Fig. 4 Model to support office skills (The authors' elaboration)

*The explanation of the elements of the support model for office skills:*

1) *Office parcels:* In this first moment the model is verified that the teacher has a personal computer equipment preferably laptop and that the equipment has installed the basic office parcel of Microsoft Office in any version, otherwise the same teacher is asked permission to install the office package in any of the following versions: 2010, 2013 or 2016, depending on both the conditions of the computer and the operating system you have installed on your computer.

Teachers must have any version installed before they can assess their knowledge and experience with

office parcels and consider that in future they must integrate both practices and exercises in their classes in front of group or in line with the or even be able to repeat them with their students.

2) *The current situation (diagnostic assessment)*: Second step of the model where it is verified that the teacher has basic knowledge of the management of Microsoft office programs such as Word, Excel and Power Point, through a series of questions and practical exercises, in order for the teacher to be considered for the course, "Support to the Office Skills in the Teachers of Basic Education of the Altiplano of the State of Hidalgo", in this course he will be able to perform practices and exercises that help improve his teaching through the use of ICT, specifically with the office parcel of Microsoft Office and with certain applications that include experience and management of online tools, It should be clarified that part of this diagnostic assessment is necessary to be able to select teachers with more knowledge and experience from the outset.

3) *Microsoft Word advanced tools*: In this third step the course begins either in person or online, where participants are induced to get involved and share their experiences with the management of basic Microsoft Word tools, then a series of exercises and practices are carried out either individually or in pairs, where the teacher learns to master the use of advanced Microsoft Word tools, practically teaches you to use most of the tools contained in the tabs such as: References, Page Design, View and Correspondence.

4) *Reinforcement with Microsoft Word practices and exercises*: Once the previous teachings are concluded, the fourth step begins where we proceed to strengthen knowledge to enable the teacher to be a knowledge manager and at the same time work with examples that are related to their staff through the following practices: Correspondence generation and handling and use of macros.

5) *Microsoft Excel advanced tools*: Fifth step where participants are invited to share their experiences with some basic Microsoft Excel tools, also by a series of exercises it is assessed the level of knowledge of both functions and formulas and qualified with observation guide to see how much they use the basic tools that have Excel books.

Two moments are considered for this segment of Excel the first must be with the basic functions of Excel and some completely basic exercises, the above to diagnose when teachers will be able to work with most operations as a sum, subtraction, division and multiplication in Excel, once they have the knowledge of the most basic, the second stage, where some of the participants are induced to present their knowledge, and various exercises are carried out which already include trigonometric, logical, statistical and information mathematical functions.

6) *Reinforcement with Microsoft Excel practices and exercises*: In this sixth step, the practice and

exercises are completed with basic Excel functions and formulas the knowledge of teachers with a series of supplements in their exercises performed, for example, you are asked to include the following in them: bar and pie charts, filters on some sheets, and conditional formatting for certain cell ranges.

7) *Microsoft PowerPoint advanced tools*: In this seventh step, it is contemplated to verify that the basic education teacher of the fifth grade of primary uses advanced tools that are integrated in the presentations that they normally make with their students in the classroom, some of which are slide notes, slide masters, and photo albums.

8) *Reinforcement with practice and exercises of Microsoft PowerPoint*: Eighth moment where once the integration of advanced tools in the presentations of teachers is concluded, they proceed to the improvement of their presentations considering certain animations in their slides and transitions.

Once the previous practices have been completed, teachers are asked to generate a copy of their work to generate Power Point executable files, that is, all the exercises they have done during the course can be generated with PPSX and PPTX versions, i.e, all your presentations that at the time created can also be generated as automatic fulfilling competitive improvements and presentations much more dynamic and structured.

9) *Teaching coevaluation*: Step 9 expects that at the end of the strengthening of the three Microsoft office programs a group of evaluators should be integrated considering their experience and knowledge to ensure that at least once a year they should monitor and evaluate the other teachers with the aim for the majority to achieve improvements in competitiveness and correct use of office parcels for students both in the classroom and in some cases with online activities or tasks.

10) *Learning the student individually or in pairs*: In this tenth and final step, the teacher will be able to teach the correct use of office packages to the students of the fifth year of primary school of any school of the Altiplano of the State of Hidalgo. Considering that at this time the teacher may choose to work with his students either individually or in pairs, it is important to clarify that if there is no computer equipment in the classroom the teacher must bring his own equipment for these sessions with the students.

Finally, the teacher decides whether to evaluate at the moment the practice of the student or students on the computer and it is recommended that, if possible, ask for at least one task per week on some online platform such as Email, Google Classroom, or connection by Zoom or Google Duo, not by social media or platforms like WhatsApp.

## 6. Conclusions

Whereas in all the states of the Mexican Republic

most schools returned to the classroom after the pandemic, and teachers now have more knowledge in the management of office parcels in the management of online platforms, it could be deduced that they are better prepared and with improvements in their office skills, however, the harsh truth is different at least for the fifth and sixth grade students of the primary schools of the Altiplano of the State of Hidalgo, as most teachers do not consider working occasionally with some online activity and the idea of complementing their teaching sequences and classes in front of group with the management of some basic office program as Word or Excel contrary to the case of Power Point that only helps them with simple presentations on some subject in the classroom but not with the dynamics of improving them, even less with the intention of showing a management of it to the students.

Due to the above the proposal that resulted from this research can generate a change in the way of working of the majority of primary education teachers of the Altiplano of the State of Hidalgo with office packages and educational platforms on the internet and even be prepared for any other contingency that may lead to a return to online classes.

Because of the lack of interest on the part of the management and, above all, the head of the school sector himself, only three workshops could be held where the proposed model was implemented and the results were positive both in the teams of teachers who were given the opportunity to participate and in the fifth and sixth grade students who were chosen by their teachers to participate in the model, therefore it was determined that the teachers who participated in the proposed model managed to demonstrate a proper use of office programs and effectively strengthened their knowledge and skills leading to better performance in the use of office programs in the most of their subjects with positive results in their students.

This article is novel because it seeks the integration of the use of information and communication technologies (ICT) with the pedagogical part of basic education teachers, through the office experience of teachers and the didactic part that can be combined in office knowledge, where the students are the main beneficiaries, since the model proposes the integration of the students to be able to transmit the use of the office package with exercises according to their level and with topics that must cover most of the subjects trying to cover the topics using the three main programs of the office suites and generate a new culture of learning inside and outside the classroom and to a certain extent be prepared for any contingency to be able to continue working even online.

What may hinder this proposal is that the authorities do not allow the implementation of the model proposed in this research in primary schools not only in the Altiplano of Hidalgo but throughout the State and that, On the contrary, it is again resorted to a management of

office packages of last moment without being previously valued the knowledge and office skills of teachers.

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