
An Urgent Need for Teacher Training in Light of COVID-19 Pandemic

Elena Tzetzángary Aguirre Mejía (elena.am@itslerdo.edu.mx)

ORCID: 0000-0003-4472-6025

Lilia Parada Morado, ORCID: 0000-0003-2169-0533

Tecnológico Nacional de México campus Instituto Tecnológico Superior de Lerdo, Mexico

Abstract

The objective is to propose a training model for teachers in the face of a disruptive change and the need for virtual education due to the health contingency caused by COVID19. The methodology is of a mixed nature with study exploratory, non-experimental, and descriptive. 104 teachers form a sample not parametric, intentional and for convenience. The results show three triggering dimensions for the development of knowledge, skills, and competencies; aimed at teachers derived from educational needs by change of modality. The findings allow the construction of a teaching training model according to current educational needs. The limitation of the model lies in its adaptation to the system itself institutional teaching.

Keywords: COVID-19 Pandemic, Educational Needs, Teacher Training, Virtual Teaching

Background

At the end of last year, the outbreak of severe acute respiratory syndrome, which detonates a pandemic alert declared by WHO (World Health Organization) due to the virus identified as COVID-19, emerges in the city of Wuhan, China, in less than 4 months the virus managed to reach all continents and on February 28, 2020 the Mexican Ministry of Health reported the first three positive cases of COVID-19 in Mexico (Santillan, 2020), due to the pandemic the government Mexico declared the suspension of non-essential activities and publishes in the DOF (Official Journal of the Federation) dated 24/03/2020 preventive measures that promote social isolation, temporarily suspends educational activities until April 12 (SEGOB, 2020), resuming the educational day only in virtual and remote mode

COVID-19 took the educational world by surprise and forced to adjust to an online teaching in a short time (Torales and Munguía, 2020), given the pandemic both students and educators were in need of adapting to online classes quickly, teachers began to provide educational care in virtual mode without experience and without prior training for this challenge, appropriated all non-face-to-face media at their disposal to develop an emergency distance education, also called *Corona teaching defined as the process of "transforming face-to-face classes in a virtual way, but without changing the curriculum or methodology"*, it caused an entry into a complex modality, with multiple technological options, immediate pedagogical adaptation and a steep learning curve, with fines optimal results, that led to frustration and burden that only demonstrate the urgency of care to adopt a virtual educational modality that generates experiences in meaningful learning

Due to this total and abrupt change teachers faced several vicissitudes: using new technology for teaching, tutoring and motivating students from a distance (Martínez and Garcés, 2020); significant technology-mediated learning, implementing instruction with technology, effective communication and in virtual environments (Carmona and Siavil, 2020); they realized that to comply with the initial work plan, under a new modality, acquire new skills, knowledge and skills in technology management, as well as accredit new skills of real demand.

We must reflect on the impact COVID-19 has had on education, what lessons we can learn after several months (Delgado, 2020) and what measures to implement for any time of the effects it has left on education.

It is important to note that the competencies of virtual teachers must be self-valued to identify training and training needs (Aguirre, Canibe and Jaramillo, 2019a), so education institutions must provide training

to their teachers to be able to design, organize and implement new ways and procedures to practice teaching in transition to the new normality (IESLAC, 2020), educational institutions at any of their levels must take on the challenge and responsibility of offering comprehensive education (Ramos, Bauza, Juarez and Laguna, 2019), for Marín, Vazquez, Llorente and Cabero (2012) the inclusion of ICTs in digital literacy or training of teachers is the most current and urgent that education needs; Compte and Sánchez (2019) point out that teaching accompaniment in different learning environments is a complex competence of diverse application that requires constant training; meanwhile, the design of integrative learning activities with technology, has become a challenge that leads to changes in the conceptualization and application of pedagogical interventions (Michos & Hernández, 2020), in conclusion, an adaptation by teachers is necessary to obtain all the technological benefit and make it available to the educational system (Laro, 2020).

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Dimensions of Virtual Teaching

For Aguirre, Canibe and Jaramillo (2019) and Ruiz y Aguilar (2017) a teacher's professional profile encompasses the integration of scientific knowledge, skills and abilities, as well as reasons, feelings, needs and values that enable, facilitate and promote effective and efficient professional performance, within a particular social context.

The technological dimension encompasses digital skills that describe the ability to understand, use and critically assess digital media and teaching-learning process, including: 1) computerization and information literacy, 2) communication and development, 3) digital content creation, 4) security and 5) problem solving (Martínez & Garcés, 2020). For Lloréns, Espinosa & Castro (2013) it is about the development of information processing competencies related to search, selection, storage, processing, organization, administration, transfer, exchange and presentation of data and information, synchronous or asynchronous, in any manageable format.

The didactic-pedagogical dimension: it encompasses the training skills of teachers that allow to implement teaching and learning processes, evaluate the process and follow up on the curriculum (Giorgetti, Romero and Vera, 2013), teaching ability to design and implement courses that include social and cognitive processes (Michos & Hernández, 2020), through the development of instructional design (Lloréns et al., 2013).

The social-communicative dimension, includes the development of communication skills mediated by technology, ability to arouse interest, find common points between communication and education, to improve citizen training and take advantage of the competencies transmitted of young people in the classroom regarding the generation of content (Pérez and Ruiz, 2020), develop learning activities that promote the development of autonomous and reflective work (Lopez and Azuero, 2020)..

Faced with this need for knowledge and competence accreditation, a group of researchers take on the task of investigating what are the most urgent skills that teachers need to propose an appropriate, relevant and efficient training model for this new normal.

Method

The objective is to identify training needs due to the challenges faced by teachers once the suspension of face-to-face activities was declared and online activities were moved by pandemic to COVID-19 cauda. Mixed methodology is used with exploratory, non-experimental, descriptive study; carried out in six phases: (1) identification of dimensions for teacher training; 2) survey design, construction and validation; 3) survey application; 4) analysis of results; 5) design and proposal of training model; (6) conclusions, recommendations.

Instrument Design, Construction and Validation

After the analysis of the theoretical framework, the dimensions necessary to carry out work in virtual teaching are identified, from the dimensions the survey is designed to detect training needs. 15 reagents adapted from the instrument validated by (Aguirre et al., 2019) are drafted, depending on the phenomenon of study of this research, consisting of the dimensions (technological, didactic-pedagogical and social-communicative) that analyze factors to identify trends in teacher training in the face of educational emergency caused by COVID-19. The validity of content is obtained through the judgment of experts on the subject (Vara, 2015), distribution and educational level is observed, the expert method is used to obtain a critical and constructive analysis in order to make recommendations to the drafting, didactics and psychology of the instrument structure. To obtain the reliability that relates to accuracy and consistency, a pilot study is carried out with the representative sample of experts giving rise to the relevance of the items with the concepts it measures or records. The reliability analysis was performed by internal consistency or intra-observer or inter-observer homogeneity and the value obtained from the Cronbach Alpha for the scale of 0.820, indicates that there is a high level of internal consistency of the scale, implies that each of the items (indicators) contributes to the total scale (concept), concluding that there are no contradictions between them.

Sample Selection: To select the sample, a call is designed to request the participation of subjects who for convenience and voluntarily wish to participate in the study, being a descriptive type study it is decided to select those subjects who have an interest in training topics for virtual teaching; the invitation is made using social networks: YouTube, LinkedIn, Facebook and Twitter; 104 individuals are the result of intentional non-probabilistic sampling as it is the subject himself who decides to participate in the survey according to the conditions and characteristics of the call launched.

Application of the Survey: Live Webinar sessions are scheduled via YouTube channel on topics related to virtual teaching training; for 6 consecutive days the event was held and attendees are invited to respond to the survey during the broadcast, sharing via chat the direct link to the survey designed in Google Forms.

Results and Discussion

Quantitative Analysis: The Google Forms results were exported to Excel and later to SPSS, to make the selection, translation, transposition, encoding of the data, generate the descriptive statistics and obtain the corresponding analysis of graphs that generate results. Table I shows registered individuals where 32% are male and 67% female; with respect to age, uniform distribution is observed in the age ranges of 30 and 50 years, accumulating 50% of the population, from 50 to 60 years 21%, 10% in the range of more than 60 years and with 19% in the range of 20 to 30 years; for the highest degree of studies corresponds to master's degree with 53%, followed by a bachelor's degree of 33%, doctorate with 13%, and with only 1% postdoctoral and specialty. Being a call for social networks, there are subjects from different countries, of which 94% are from Mexico, 3% Colombia, 2% Bolivia and 1% from the Dominican Republic.

The most relevant data is an item to identify the level of education to which you dedicate teaching functions, registering 39% to Bachelor's degree, 30% at the basic level and 20% postgraduate.

Questions were asked about the didactic-pedagogical dimension, when asking about the average implementation of the instructional model, it is observed in Table I, that 30% respond that they do not know instructional models for virtual courses, 34% answer that they do know it, but it implements very little and 37% agree to use it in a moderate but not complete way. The record shows that at least 1 in 3 teachers do not know the instructional models and 1 in 3 do not apply them in their entirety, the lack of knowledge and interpretation of the advantages and benefits derived from applying instructional models to virtual courses is evident, since according to Aguirre and Canibe (2020) the implementation of instructional models reduces daily workload, efficient student time and manages more than 90% of course times and development.

Table I. As you implement instructional models to your virtual courses			
	Frequency	%	Cumulative percentage
I do not know the model	31	30%	29.8
I implement it very little	35	34%	63.5
I apply it moderately	38	37%	100.0
I apply it in its entirety	0	0%	100.0
Total	104	100.0	

As for the question: advantages observed when applying instructional models to virtual courses subjects respond by 16% to accept knowing all the advantages offered to apply the model, 30% know of some or few advantages of applying the model and 54% agree to ignore the advantages of applying the model to virtual courses, data that we can see in Table II.

Table II. Learn about the benefits of applying instructional models to virtual courses			
	Frequency	%	Cumulative percentage
I know all the advantages.	17	16%	16.3
I know very few advantages.	31	30%	46.2
I do not know the advantages.	56	54%	100.0
Total	104	100.0	

To get an overview of the degree of technological competences held by the face-to-face teacher, it is researched about the knowledge of platforms to teach virtual courses and the level of configuration or management that they have observed in table III, 40% of the subjects respond that they do not know online learning platforms, 9% know how to manipulate them only 20%; 34% know how to configure them 50% of those used and functions of the platform; 14% can configure up to 70% of the educational platform and only 3% know and configure 100% of all the functions of an educational platform.

Table III. To what extent you know and set up virtual learning platforms			
Percentage of domain and configuration	Frequency	%	Cumulative percentage
0%	43	41%	41.3
20%	9	9%	50.0
50%	35	34%	83.7
70%	14	14%	97.1
100%	3	3%	100.0
Total	104	100.0	

In Table IV we look at the results with respect to the knowledge and use of learning objects, subjects respond to 31% who do not know or use OVA; 42% acknowledge knowing, but using them infrequently; 11% if they know OVA, but do not use them for their virtual classes and only 16% always recognize using them in their virtual classes

Table IV. To what extent you know and use learning objects to support your virtual classes.
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	Frequency	%	Cumulative percentage
I know them and use them infrequently.	44	42%	42.3
I do not use them, and I do not know them.	32	31%	73.1
I do not use them and if I know them.	11	11%	84.1
I always use them.	17	16%	100.0
Total	104	100.0	

These results reflect that teachers in the face of a disruptive change are forced to design, manage and configure tools that they do not know, that need training in the management of technologies according to the needs for virtual courses.

On the implementation of accompaniment models in virtual courses, it is noted in Table V, which 15% of subjects accept that it implements accompaniment models for virtual courses; 46% do not know accompaniment models; 13% know the models, but they do not implement them and 26% know the accompanying models, but implements them very little in their virtual classes. In the same way as the previous dimensions, there is evidence of the lack of knowledge and training in themes of virtual accompaniment models, which relate to the constant and daily approach that the teacher has with his students, which must be appropriate and relevant at all times

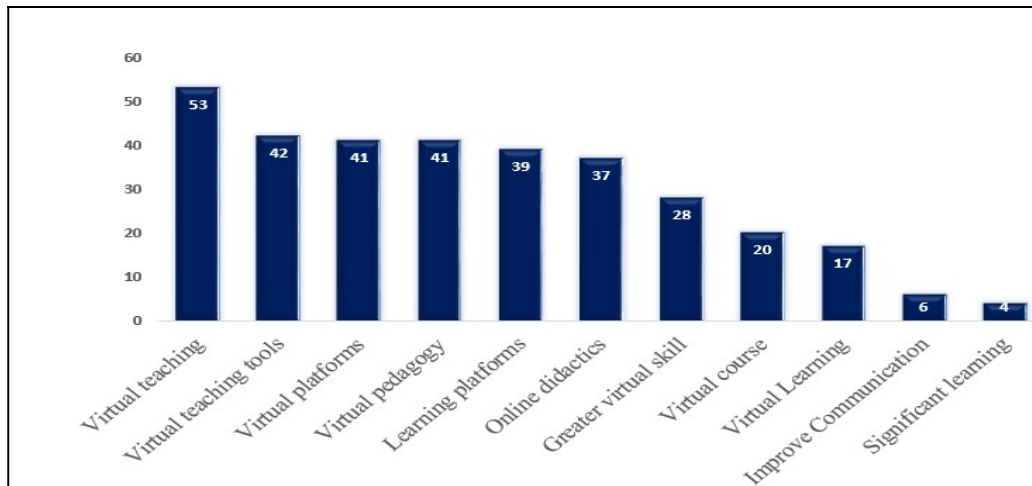
Table V. To what extent you know and implement accompaniment models in your virtual classes.

	Frequency	%	Cumulative percentage
I know models and implement very little in my classes	27	26%	26
I know models, but I do not implement them in my classes	13	13%	38.5
I do not know accompaniment models	48	46%	84.6
I always implement accompaniment models in my classes	16	15%	100
Total	104	100	

Qualitative Analysis: The results of Google Forms were exported to Excel and subsequently to Atlas.ti, in Figure 1, the analysis of the responses of 104 participants is observed, to detect training needs arising from change of modality to the health situation by COVID19, when performing functions in virtual teaching. The main concepts were codified with a total of 11 key codes, the results show as the main need for training the development of skills for virtual teaching with 53% recurrence among respondents; 42% agree that they need to develop digital tool management skills; 41% also indicate that they need to improve management on virtual platforms; 41% who need information on pedagogy dedicated to virtual teaching; 39% require configuring learning platforms; 37% agree that they need training in virtual teaching-oriented didactics; 28% require greater overall knowledge in virtual teaching; 20% in virtual course development; 17% require techniques to increase learning with virtual students; 6% request techniques and tools to improve communication with their students and 4% to generate meaningful learning.

When conducting an analysis on the repetition of codes in participants' responses, we obtain a graph (see Figure 1), which shows the degree of impact on participants' responses, we can see how the phrase virtual teaching is repeated in 53 of the time in the 104 participants, which is a topic of great interest to more than 50% of them.

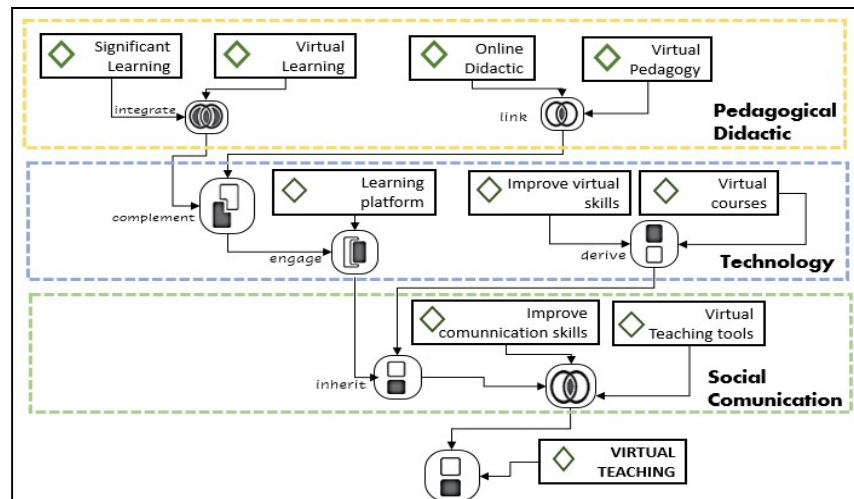
Figure 1. Detection of training opportunity for virtual teaching



Note: The graph shows the frequency result on most used words in participants' responses. An analysis is performed to detect relationships between identified codes, the result is seen in.

Finally, a filter is applied to identify and group concepts to training dimensions, the result seen in Figure 2, serves to design and propose the emerging training model for needs arising from COVID-19, being the relevant teaching-pedagogical dimension for containing the greatest number of codes, suggesting emphasizing this dimension when managing teacher training.

Figure 2. Hierarchical model of emerging training



Note: The hierarchical image associates and identifies the required training dimensions.

Conclusions

The results show a trend of urgent need in training to accredit skills necessary for teacher performance in a virtual modality, evidenced a current and emerging landscape on specific topics that teachers need to know for the performance of functions today (Lopez and Azuero, 2020).

We can highlight the following points that are key to training management:

1. Teachers need to know and practice more in-depth instructional models to carry out quality activities and courses appropriate to virtuality (Montoya and González, 2019).
2. Teachers require training in the management and distribution of time, as well as a plan for the development of resources, activities and virtual courses (Montoya and González, 2019)..
3. Teachers need more knowledge in tools for designing digital resources to support their virtual classes (Laro, 2020).
4. Teachers require greater experts in the didactic-pedagogical and technological design of virtual activities oriented to virtuality (Michos and Hernández, 2020).
5. Teachers need to implement methods, techniques and strategies to develop mentoring functions and distinguish moments to motivate, incentivize, mediate, engage and retain (Aguirre and Canibe, 2020).
6. Teachers need to know more learning platforms so that together with their school they choose the one that best suits their needs (Laro, 2020).
7. Teachers need to know and implement all the stages of the indispensable accompaniment models in virtual mode and as they can together with the educational institution design the best model of accompaniment according to the needs of the students (Aguirre and Canibe, 2020)
8. 3 dimensions required to perform virtual teaching are identified.
9. Key concepts in training related to a dimension, basis for designing training courses and workshops around this need are identified.
10. A model is designed and proposed to manage teacher training processes, the hierarchy allows identifying the urgent topics to attend, and the model encompasses emerging training needs.

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