

Educational Scenarios Using Technology: Challenges and Proposals During the Pandemic

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Abstract

The development of remote education could have significant advances at the academic-pedagogical level, if appropriate use is made of techno pedagogy. The study is an exploratory descriptive research at an explanatory level, where the main purpose was to explain the challenges during the pandemic in educational scenarios in the face of the technology used by early childhood teachers in two Peruvian regions. This was oriented under the qualitative approach and applied a questionnaire of open-ended questions to a sample of 100 teachers. The main findings reveal that there is no differentiated use of digital resources and tools for planning, implementation and evaluation, despite the efforts of teachers to bring learning experiences to their young students, overcoming technological, economic and other difficulties due to the current situation. However, a more pedagogical orientation is required because this will benefit the optimization of time, consequently, improving the results of learning in basic education and the quality of life, towards the institutionalization of proposals for the professional exercise in the scenario of non-face-to-face education that assumes features of distance education.

Keywords: Technology, Distance Education, Basic Education, Quality of Life.

1 Introduction

The educational field concentrates significant and expectant action in response to the rethinking of life in general, a stage in the history of humanity in which we struggle for subsistence while learning to live with a virus that continues to mutate among the regions of the planet. The value of education has always converged between being a fundamental right and promoting the progress of societies (Unesco, 2021). That is why, in current circumstances, it is possible to affirm the multiplied responsibility in the teacher's job, challenging the use of resources, skills and specific teaching competencies that in many cases constitute difficulties. In fact, the surprising presence of a virtual reality increases the existing digital gap and evidences the scarce installed capacity of the educational actors.

Towards the end of the 1990s, distinguished scholars such as Morin, made interesting reflections about consolidating education for a viable future, implying indispensable changes in thinking, so that new teaching-learning processes could be configured, without foreseeing that in a short time we would be migrating to another scenario (Oliva, 2020).

Certainly, in all countries of the world, this evolution occurs in different degrees of complexity and education during the pandemic, transformed the usual thinking and actions of the teaching task. Thus, the organization of the classroom, the time to carry out activities, the ability to explain certain topics, to receive ideas by holistically observing the students and to answer their doubts promptly, can be cold and distant aspects within the framework of remote education. Undoubtedly, a growing synchronous and asynchronous exchange constitutes the options of non-presence and leads to the unavoidable challenge of creativity, linked to the use of digital tools with pedagogical sense, in a deployment of efforts to reverse the little knowledge of the ways for a distance education for children who depend on the accompaniment of their parents and the recurrent non-connectivity (Rapoport et al., 2020).

Likewise, in the current Peruvian education, there are similar episodes progressively glimpsing the lack of consistency between the uncertain ideal and the real demanding not only the effort, dedication, commitment, but also teacher preparation in these circumstances.

In this line, the concern was installed to know how regular basic education is developed and specifically, the early education level in Peru. This being the basic stage in the development of competencies and its users, children under six years of age, subjects of law, action and social beings (MINEDU, 2016); the questions revolve around how do teachers carry out their jobs, considering the age characteristics of the students and their demands, what technological elements are the most used during the pandemic for the development of learning experiences, what factors would be influencing these manifestations of the teaching task in times of pandemic? What factors would be influencing these manifestations of the teaching task in times of pandemic, among other questions that derive from certain problematic manifestations approached even comparing the realities of two regions of the country and that finally orients to reconcile how should the work be using technology with a more pedagogical orientation?

So, after one school year of implementing the "I learn at home" strategy, although some aspects are considered positive, there are indications that translate into limitations in the use of technological resources, predominantly teacher-student communication through phone calls and the use of social networks, reducing the opportunities for synchronous communication and being reduced to the designation of tasks, plus evidence reports by parents. Incidentally, this overload of activities and files on devices such as Smartphones would be in contradiction with the true formation of fundamental learning, if not properly processed.

In this context, the Lambayeque and Ancash regions are immersed, where it became evident that teachers working for urban, rural and marginal urban institutions show restrictions to diversify their strategies with the use of techno-pedagogical tools. This problem is reflected, in general, in the scarce mastery of the performances related to planning, mediation and evaluation of learning in remote education. Meanwhile, specifically, there are: one, limitations to select and organize different technological resources and useful digital tools that are coherent with the expected learning; two, inadequate time management that disagrees with the purpose of the experiences; three, incipient evaluation, because they only stick to aspects of formality and administrative activities that are not adjusted to the issuance of value judgments in order to make the best decisions in favor of the learners.

Under these premises and a brief analysis of the issues that prevail in the educational field, the objective of the study is to explain the challenges during the pandemic in educational scenarios in the face of the technology used by teachers of the initial level in the Lambayeque and Ancash regions, applying an open questionnaire and the scope of the qualitative approach categorically oriented the research, to finally provide as a contribution, the techno-pedagogical proposal of the study.

It should be noted that, considering educational scenarios in the face of technology as a fundamental category, it is necessary to define them as those virtual classroom spaces where the teacher has not stopped planning, executing and evaluating school learning. However, they carry out their professional work with the basic use of technological resources, while facing influential aspects, such as initial preparation, continuous training and others related to the current situation that aggravates the economy and life in society.

Consequently, this research is justified by the urgent need to reduce the distance between pedagogical and technological aspects in order to provide practical achievements without denaturalizing learning processes, comprehensive training and quality education for all.

Finally, the impact of the study lies in those contributions that make the integrated use of ICT for pedagogical purposes viable, as promoted by the TPACK model, one of the main arguments of the study.

2 Literature Review

Even in the so-called technological era, recent events have brought an end and a new beginning to the approach to digital competencies. Although they were announced as rich tools that could be exploited in the pedagogical field, the arrival of the health crisis accelerated the use of these mechanisms in a generalized way. For these reasons, the following lines present the works that for some time now have closely linked the categories of the study and stand out as precedents.

In Brenes' work (2020), the progress of Costa Rican public sector teachers was analyzed with respect to their competencies and how they take advantage of digital technologies with an educational vision. One of the main contributions of the work was the elaboration of the map of progress of competencies based on three dimensions: pedagogical and didactic execution, appropriation of ICT and innovation in the organization of the learning environment; also concluding that there are several influential factors in the level of progress that could not clearly define the predominance of one over another, referring to the teaching vocation, age and university of origin. Undoubtedly, the research is an approximation to those factors that influence and describe teachers and their proximity to the use of technologies, especially the attitudes combined with the skills they possess, making their adaptation viable in work scenarios such as those that exist today. Definitely, these considerations can mitigate the difficulties with the installation

of lifelong learning networks, based on the constant coordination and collaboration of the teaching team, as stated by Rapoport et al, (2020).

On the other hand, alluding to personal, institutional and training conditions, Arancibia et al. (2019), analyze the integration of technologies in educational processes, highlighting that the inclination for the use of cell phones by students allows for ubiquitous learning as it is easy to transport and adapts to the spaces they have available, while teachers resort to a variety of what is offered by ICT. Thus, the study investigates the use, value and attitude among Chilean teachers and their students, regarding technologies in education, using the survey technique, with an instrument that dimensions those social and demographic features, the technological devices owned and the intended use, technological knowledge and the time of service revealing the experience in the academic environment. In fact, these elements are linked to explain in a deep and qualitative way the pedagogical practices that are carried out with technological support and that are necessary in the present research.

Regarding the didactic processes that teachers develop in the context of remote education, Cabero and Martinez (2019), suggested in advance that teacher training in ICT, implies the description of a journey through some of the bases and models with the ultimate goal of improving the quality and educational performance. It is then a matter of supporting innovation without limits, promoting transformations that imply going from using them only as a way of consuming knowledge, to seeing them as tools that can be enriched, created and generate others with pedagogical meaning. In short, the referent orients the criterial perspectives for the structuring of sustainable training programs, which anticipate the teacher so that he/she is apt and efficiently responds to the challenges of a system in constant evolution, prone to unexpected situations such as the still present health crisis.

Definitely, the mentioned works generate high expectations, contributing systematically to the objective and tasks in the study, reflecting especially on current issues and suggesting immediate action, not only from the teaching competency aspect, but the shared responsibility of educational and governmental authorities, with state policies, university performance, training centers; converging in advancing strategically and keeping the system prepared in general. Thus, it is essential to continue investing in teachers, as those who will make possible the proper use of tools in close connection with pedagogical knowledge, always at the service of man and not the other way around, affirming that, therein lies the importance of techno pedagogy and the approach of more relevant solutions in these times.

In line with the purpose of analyzing how teachers face the pedagogical performance in times of Covid-19 and after the review of empirical literature, it should be emphasized that the most current postulates are assumed as a basis for explaining the relationship between the educational scenario in times of pandemic, the educational purposes and the use of technological resources and tools.

The Theory of Connectivity and Integration of Learning at the Initial Level

For some time now, the entry of information technology into the educational field has been imminent, especially now in a context of urgent appropriation of digital competencies in pedagogy. Without detaching from the purpose, the teaching-learning process and the various digital tools for active exchange, gain preponderance and impact on better results in small students located on the other side of the interface. In that sense, around the foundations of chaos theory, connectivism explains how knowledge is incorporated and produces learning when it "defines the human mind as a network that adapts to the environment (...), learning would be the process of forming networks through connections between different nodes, and knowledge resides in such networks" (Cabrero et al, 2019). Thus, by

exchanging active and creative roles, the learner is perennially in the necessary update to its nature, by making new connections, examining patterns and making decisions; which attributes a certain accumulation of favorable experience.

According to the theory supported at the beginning by Siemens and Downes, connectivism is the best theoretical and updated explanation that integrates learning in virtual environments. For Islas and Delgadillo (2016), it is the only theory that provides a relevant understanding of learning based on the use of technology, since the rest of the theoretical paradigms present limited significance to reveal the domain "of the interconnected digital world over the learner, since for them learning is always individual and voluntary, qualities contrary to current learning in the digital era" (Cabrero et al, 2019).

In summary, to explain the learning of infants by promoting active, synchronous and asynchronous strategies, it is important to know the close relationship between the networks of neural connections and those of social-electronic learning, understanding from this theory that children are able to learn and constantly update previous learning, while a series of associations occur involving the use of various cognitive processes, some almost involuntary and more collective.

Challenges in Pre-school Learning with Technology, Oriented Under the T-PACK Model

The referred model sections the knowledge with three combinations; "Pedagogical Content Knowledge, (...); Technological Content Knowledge, (...); and Technological Pedagogical Knowledge, (...)" The first is the didactic knowledge of the content; the second, alludes to how technology is advantageous in the generation of new forms of content; and the third, the interrelation between a set of knowledge with the use of technologies in the teacher's methodology (Miralles-Martínez et al., 2019).

Based on these components T-PACK, defined by Cabero et al. (2017), as knowing how to "coordinate the specific contents of the subject using ICT to facilitate student learning"; techno pedagogy for teaching-learning in early education, activates the criterion unifying the tasks of didactics and how this can enhance when technologies are used in particular ways. Although the above includes identifying certain advantages and the opposite, it is necessary for the teacher to feel comfortable with the integration of technological aspects, pedagogical and learning experiences, in order to assume a more holistic position of this, responding to the current need to strengthen remote education.

Incidentally, digital competencies are defined as articulated knowledge in accordance with the definitions analyzed in the common framework of digital competence for teachers. Digital competence involves the critical and safe use of information technologies for work, leisure and communication. Relying on basic ICT skills: use of computers to retrieve, evaluate, store, produce, present and exchange information, and to communicate and participate in collaborative networks through the Internet (European Parliament and the Council, 2006; cited by INTEF, 2017). Similarly, Lucas (2020), used as a reference the aforementioned document, validating what he called DigCompEdu and which was applied to 1071 teachers to know the influence of personal and contextual aspects on digital competencies; finally providing beneficial scopes to act in policy and professional practice, considering that certain personality characteristics such as, self-control, autonomy, perseverance, assertiveness, responsibility, cooperation, among others, prevail over contextual elements.

On the subject, García and Martín (2016, cited by Lévano et al., 2019), wrote about the existence of a consensus whose extension covers vast sectors in society, attributing to teachers the duty to possess basic digital competencies, which allow them to exploit the greatest amount of pedagogical capabilities in relation to new technologies. Thus, the challenge invaded all areas, issuing generic regulations, one

of them, the so-called Framework of Good Teaching Performance (MINEDU, 2014); structuring in this way, curricular approaches and very new trends in relation to the intricate field of evaluation of professionals in the education sector, under this aspect. Certainly in Peru, eight years ago, the teacher reform law was approved and updated with amendments to its regulations, such as the one enacted to postpone evaluations for level promotion and to be carried out this year, in circumstances in which the health emergency surprised these mechanisms (DL N° 1493-2020). The aforementioned, succumbs in the reflection about the considerations on the new educational normality and certain conditioning to respond to these scenarios, guaranteeing the continuity of the socio-constructivist paradigm of the National Curriculum, centered on the competency-based approach (MINEDU, 2016). In spite of everything, it is a transforming perspective, linked to establishing new professional competencies that contribute to individual teacher training, in addition to constituting an expected criterion for the promotion of solid pedagogical communities in globalized and ever-changing scenarios.

Certainly, this untimely entry into distance education, warns of varied levels of information literacy in teachers, this being understood as those capabilities for the search, selection, storage, retrieval and evaluation of information, being important to consider that it must be communicated in an ethical manner. Thus, the questions that delimit the concepts are appropriate. Although digital tools are designed to facilitate the work and allow resources to be applied efficiently, their choice and application will depend on the requirements of each person. Meanwhile, there are differences between technological resources and digital tools, the former being considered as physical (computers, printers, cell phones, USB sticks, etc.) and the latter as immaterial (systems, applications or antivirus). Therefore, tools are a kind of intangible resource such as word processors. Among the most widely used is WORD, highlighting the possibility for teachers to produce works, reports, stories, notes, tables, diagrams, with spell checking thanks to a spell checker that is automatically configured and operated. This program is versatile and of common use because it also allows to add images, graphics and audio-sound between the texts that are written.

Other tools are multimedia presentations such as Power Point, Photoshop, Publisher, Excel.

Finally, the theoretical approach summarizes the elements of conviction for the development of a work that also provides a program for the techno-pedagogical use of digital tools.

3 Methodology

The study conducted has a qualitative approach according to Hernández, Fernández & Baptista (2014), whose characteristic is to give meaning to the data extracted, having as a process the analysis of the reality that allows showing the benefits of the research by deepening the analysis of data obtained, in that line is taken into account its breadth and interpretative richness.

The type of the research is exploratory descriptive of explanatory scope according to Supo (2014), emphasizing on demonstrating causal relationships, categorizing, synthesizing and comparing the information obtained, adding a proposal that impacts on the needs detected by the teachers of the initial level in the use of techno pedagogical resources in educational scenarios during the Covid-19 pandemic.

The method used is the analytical one, which was developed in three moments, the first one; when analyzing the literature, the second one; in the determination and description of the categories and finally the third one; in which the interpretation was carried out, which involves integrating, relating, establishing connections, causes, effects and comparisons of the information collected. "The analysis is based on a comparative method that confronts cases that are similar to each other, but differ in some

crucial characteristics, trying to formulate interpretations that include theoretical concepts" (Serbia, 2007).

The research design is open and flexible in such a way that the selected sample is non-probabilistic and intentional, so the survey and the questionnaire were the technique and instrument used respectively for the collection of information. The application of the Google form to 100 teachers at the initial level in the Ancash and Lambayeque regions made it possible to collect the information. Finally, the systematization of the data was carried out through the Excel program, using structural matrices with the application of some functions and Google Ads to count the words that made possible the categorization of the answers, thus obtaining the qualitative analysis, supported by some quantitative procedures of the research data.

Regarding the characteristics of the instrument, it is sufficiently clear, and the relevance and internal consistency of the items was confirmed by the judgment of five experts. Thus, the questionnaire for teachers received maximum percentages of valuation (100%), placing it in the "very high" level of the scale used.

It is important to point out the importance for the field work of an adequate treatment in the processes of construction, validity and application of the instruments, events in which the ethical considerations referred to respect for those evaluated (the informed consent protocol is added to the questionnaire), discretion (the information received is anonymous) and truthfulness in the information (the results will be exposed and accredited in a set of data generated for the purposes of the study) were maintained.

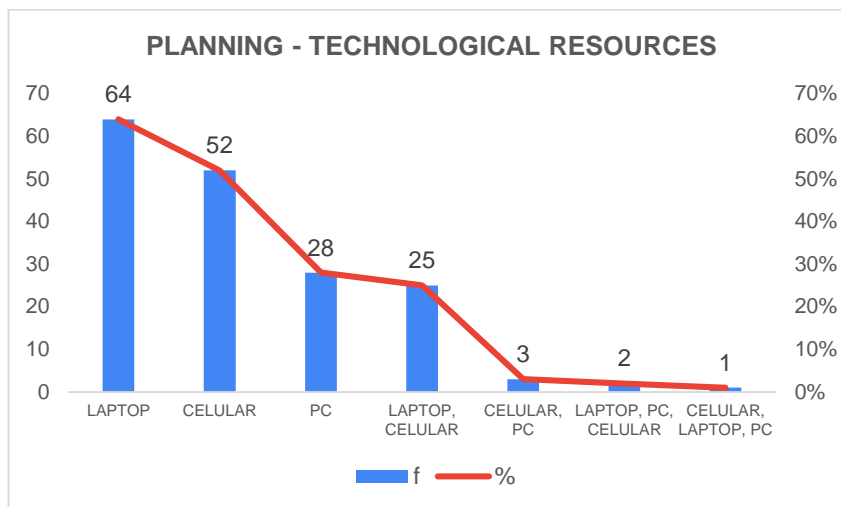
4 Results and Discussion

The section is organized based on the purpose of the research, which explains the challenges experienced by preschool education teachers in two regions of the country, undertaking to answer the questions: how do teachers carry out their jobs, considering the characteristics of the students' age and their demands; what technological elements are the most used during the pandemic for planning, execution and evaluation of learning experiences; what factors would be influencing these manifestations of teachers' work in times of pandemic? What technological elements are the most used during the pandemic for the planning, execution and evaluation of learning experiences? What factors would be influencing these manifestations of teachers' work in times of pandemic? How should the work be using technology with a more pedagogical orientation?

Evaluation of the Use of Technology in Educational Scenarios

The field tasks constituted a revealing response to a questionnaire circulated virtually by means of a Google form, revealing the level of teachers' approach to ICTs. For many participating teachers, this tool ceased to be the disturbing evaluation of before, because in these circumstances, they usually receive this type of instrument on a daily basis, causing little interest in responding because it demands part of their limited time to rest away from the screens. However, the possibility of learning to use this useful mechanism in the different stages of their pedagogical work stands out.

The following tables and figures show the results of the evaluation of teachers in the regions of Ancash and Lambayeque, specifically, in the cities of Chimbote and Chiclayo, most of them teachers working in the urban areas of these cities.



Graph 1: Use of Technology in Pedagogical Planning Processes

In reference to technological resources, most teachers use laptop, cell phone and PC, in that order, as the only devices they have. In average proportion, another group uses laptop and cell phone or cell phone and computer (PC) and a final variant groups those who have all three types of resources. Some explanations can be inferred from this. First, the initial education teacher has as her main work tool a light equipment that she has probably always used in her work and her preference is based on the practicality of transporting it, as well as on the costs she has invested in a laptop computer. Second, the cell phone is the most common device, if it is to mention the multiple uses of non-academic type and that, for some time, became the most attractive device, so much so that, it could not be missing in every home and there is at least one of these devices per family. Third, a smaller proportion of teachers have a computer, which would be related to the economic disposition that generally leads to other priorities. Fourth, there are responses that reveal the use of various devices and alternations in their use, which may be subject in many cases to availability (several members of the family need a device at the same time and take turns using it) and to signal reception capacity (data in prepaid and postpaid telephony services or internet signal with low speed); aspects that prevail over the choice with criteria less related to the pedagogical purpose.

Table 1 shows the most used digital teaching tool in planning, revealing the most used among multiple responses, highlighting the first one mentioned. The statistical result through formulas in the Excel program indicates that the fashion is WhatsApp. It should be noted that the relationship between the sample size and the preferences in the use of these mechanisms is not exact, since the participants have in most cases more than one answer.

However, if in the analysis by word count, all those evaluated and their answers are considered, the results vary from the second location, always leading WhatsApp, followed by Zoom, Word and Meet (Figure 1).

Table 1: Use of Digital Tools in Pedagogical Planning Processes

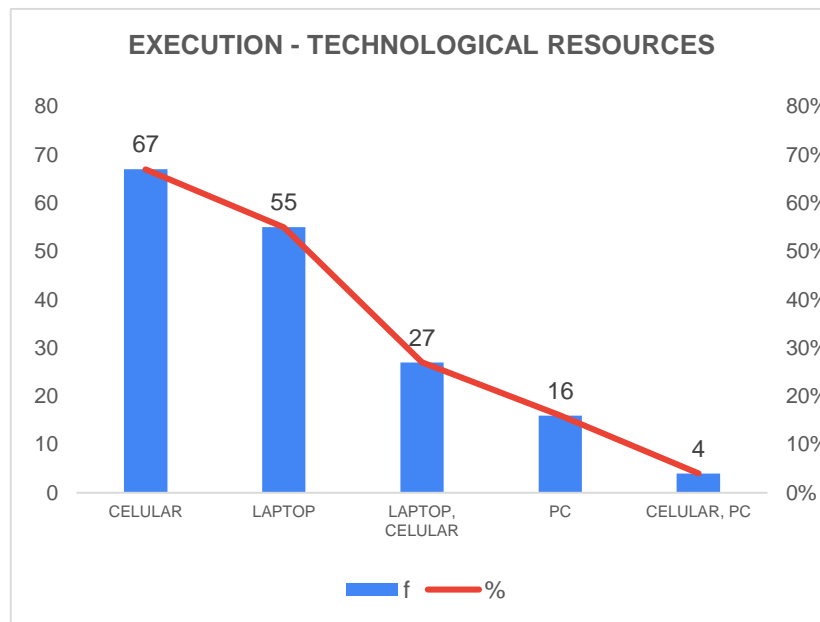
DIGITAL TOOLS	f	%
WHATSAPP		43%
POWERPOINT		14%
CANVA	5	5%
FACEBOOK		4%
GOOGLE DRIVE	1	
OTHER		33%
TOTAL		100%

Note: Data extracted from the questionnaire applied to pre-school teachers in the regions of Lambayeque and Ancash (n=100).

In fact, more than 56% of the surveyed teachers use WhatsApp (43%) and Power Point (14%) more frequently; on the other hand, Canva, Facebook, Google Drive, are shown with very low proportions of use. This indicates that both technological resources and digital tools are linked to the majority of teachers' preference for a cellular device, turning it into an ineffable accessory that accompanies daily routines and in times of pandemic became their best acquisition. In this regard, the study by Lagunes-Domínguez et al. (2017), warned of the existence of technical feasibility for the use of the cell phone, sustaining the mobile learning of university students in Mexico and Colombia. Under similar conditions, such as having the equipment, mobilizing for several hours to their universities and above all, the ability of young people to manipulate these mobiles, even in educational scenarios; a new argument that benefits the telephony industry and services related to it is declared. It is likely that this trend will take hold in the medium term and now it is proven that the cell phone is a tool for young people as well as adults.

On the other hand, by appropriating technology, teachers have assimilated rapid learning, even more so in this sudden step to remote education, however, one out of ten teachers uses the most suitable and accessible tool such as Google Drive, specifically in planning tasks, being this valued in the framework of collegial work that prevails as part of the strategies of the Ministry of Education in Peru. Incidentally, collegial work encourages the integration and promotion of spaces for reflection and permanent learning, group feedback and self-evaluation of the participants Miranda and Trejo (2016). But now, in the framework of virtuality, applications are required that allow this to be done synchronously or asynchronously, such as interacting in the cloud.

A year before the general state of emergency, Teller (2019), pronounced regarding multimedia devices as elements of distraction that occupied long hours of young people's time, impairing their academic performance. However, these practices have become widespread, but forced to be constituted as a support for learning. In relation to this, the research affirms (see graph 2), as in the planning processes, the small device is the most used in the execution of learning experiences.



Graph 2: Use of Technology in the Execution Processes of Learning Experiences

The reflections based on the findings to know what concerns how teachers develop their activities in contact with the small student, incorporate other elements that were previously very distant in face-to-face teaching. Certainly, in the so-called homeschooling, both the teacher and the students exchange a frank relationship of the lived reality. In the case of children in particular, there are risks for the results of educational actions, due to the educational level (both in terms of support and socioeconomic), which is also influenced by the parents' level of education. As stated by Martinez and Gamboa (2020), the pandemic builds a new triad; Covid-19, poverty and education, where commitment and discipline are involved, subject to the aforementioned factors.

These premises lead us to infer the presence of other elements, such as economic or technological elements, if we reflect on why out of the one hundred evaluated, only 16 use a PC. Presumably, and evidencing the installed capacity of the teachers, it is worth investigating the advantages and disadvantages of a computer, based on the teacher's perception.

The following table shows the medium through which the learning experiences are carried out, with Zoom and WhatsApp being the applications preferred by the majority and mentioned as the first option. In fact, finding guidelines based on the regulations issued by the ministerial bodies, there is a good number of teachers trying to sustain more frequent interaction strategies for their sessions, unlike the first year of virtuality, in which the lesson learned induced to suggest other mechanisms that transform the limited messages and phone calls and WhatsApp, in a contact of at least thirty minutes of duration, as allowed by the listed platforms and others. Despite this, there is still the dependence of a good group of pre-schoolers on WhatsApp, overloaded with unlinked activities and little interaction with their teachers (Stella, 2021, Jun 17).

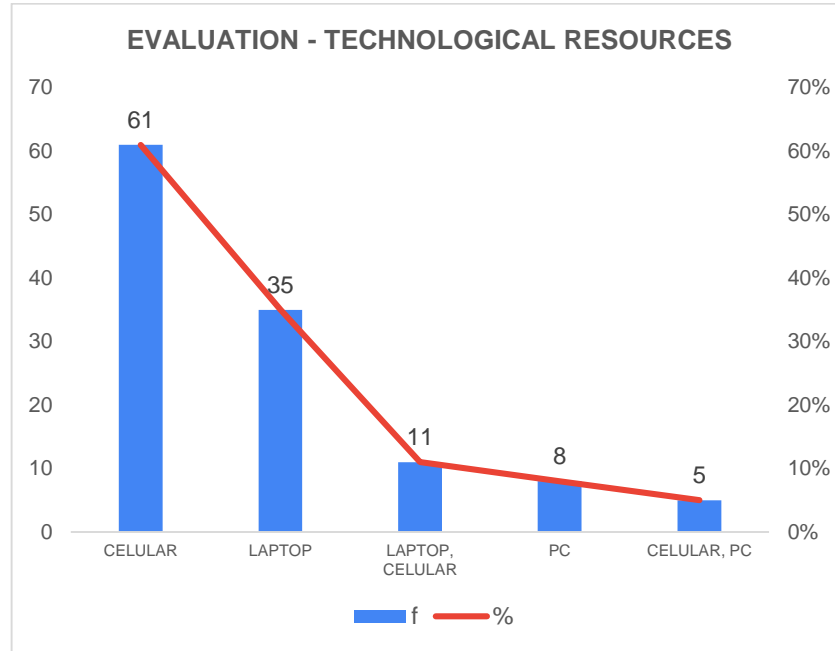
Table 2: Use of Digital Tools in Processes of Execution of Learning Experiences

DIGITAL TOOLS	f	%
ZOOM		44%
WHATSAPP		44%
GOOGLE MEET	5	5%
INSHOT		7%
TOTAL		100%

Note: Data extracted from the questionnaire applied to pre-school teachers in the regions of Lambayeque and Ancash (n=100).

Likewise, in the use of Google Ads, the answers and tools listed on their use in the pedagogical execution stage are confirmed, expressing, without a doubt, that the well-known social network and the Zoom platform are the most used by teachers at the initial level.

However, the findings on the use of technology for pedagogical evaluation processes indicate that it is the cellular device that has more than 60% of the sample making use of it (Graph 3). It should be emphasized, in this scenario of virtuality, resources within reach and that have been massified, existing predisposition of teachers to use small androids, without differentiating generational age or years of experience, rather there is a higher level of stress associated with the use of technologies (Brenes, 2020; Tapasco and Giraldo, 2017; Arancibia et al., 2019).



Graph 3: Use of Technology in Pedagogical Evaluation Processes

Table 3, meanwhile, shows that almost 50% of the subjects evaluated, provide the feedback agreed upon within the educational model "I learn at home" through WhatsApp. Incidentally, Cabero-Almenara and Palacios-Rodríguez (2021), consider it fundamental to develop competencies among teachers that strengthen them by selecting, creating, modifying and evaluating different useful and relevant resources both for learning and for measuring achievement.

Also, Raposo and Cebrián (2019), highlight the benefits of digital technologies in diagnostic, formative and summative evaluation, even serving to individualize teaching, communication and reflection; making the feedback dynamize the exchange, without being limited to feedback. It is about incorporating self-assessment and co-assessment, with the help of digital portfolios, electronic rubrics and multimedia annotation systems, which facilitate the addition of annotations on images and videos (Salvat and García, 2021). In short, these digital alternatives would diversify and enhance the evaluation processes in asynchronous spaces, but making use of Google Drive, Excel and Word, tools that are only used by 18 out of a hundred teachers.

Table 3: Use of Digital Tools in Pedagogical Evaluation Processes

DIGITAL TOOLS	f	%
WHATSAPP		47%
EXCEL		10%
WORD		
VIDEO CALLS		7%
GOOGLE DRIVE		
OTHER		28%
TOTAL		100%

Note: Data extracted from the questionnaire applied to pre-school teachers in the regions of Lambayeque and Ancash (n=100).

Emergence of A Proposal

From the exploratory evaluation that allowed the survey in this research, a proposal was modeled that can be used in the framework of continuous training, as suggested by Fernández et al. (2016), by proposing a questionnaire to measure digital competencies, a useful instrument in the collection of information and design of ICT programs for teachers.

Thus, incorporating basic and available tools, the techno-pedagogical intervention proposal for early education teachers was modeled, the same that arises from the previous reflections, knowing that technological difficulties and inequality are unavoidable aspects, valuing the effort of the education professional who creatively tries to maintain the quality of the processes and an educational service that reaches more and more children, despite the low connectivity and equipment available to families. In the same way, Schwartzman et al. (2021), proposed accompanying teachers and giving way to a more technical pedagogical use considering key aspects such as training and personalized tutoring, alternating synchronous and asynchronous activities, in such a way that situated pedagogical actions are designed. Therefore, the main purpose of the contribution is to promote the development of techno-pedagogical strategies for the planning, execution and evaluation process at the early education level (see annexes).

5 Conclusions

The study evaluated the use of technology by early childhood teachers in the pedagogical activities of planning, execution and evaluation. In general, there are indications of an approach that overcomes the difficulties inherent to the current situation with responses that are the result of the strenuous effort to professionally attend to virtual education. However, a more pedagogical orientation of the resources and tools used is required in order to solidify knowledge, pedagogy and technology in unison.

The research also proposes a techno-pedagogical intervention model for early education teachers, specifically considering a training program oriented to the use of techno-pedagogical resources and tools. This will favor the optimization of time, results and quality of learning at the pre-school level and thus the institutionalization of good practices, overcoming challenges in the distance scenario.

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