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# Transformation of the musical education derivate from the COVID-19 pandemic: From traditional teaching to the use of virtual environments

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## Abstract

As a result of the COVID-19 pandemic, music universities in Peru have had to adapt to new ways of providing educational services. Consequently, teachers have transformed their practices to achieve virtual teaching by applying various technological resources. This research aims to analyze how music teachers transformed traditional teaching-learning processes to fit the new virtual environments derived from the restrictions due to COVID-19. The analysis is conducted within a qualitative approach using the phenomenological method, and the data collection involved twenty-one interviews with teachers from four public universities in Peru. The results indicate that teachers of theoretical courses easily adapted to the virtual environment, while those teaching practical courses faced challenges that could not be overcome. Regarding modifications to the methodology, there are divergent opinions; an important resource was home videos, as they can enhance student performance and enable objective evaluation by the teacher. Additionally, digital competence must be integrated into the study curricula for a comprehensive education of the student.

**Keywords:** Digital competence, Musical education, Pandemic, Teacher, Transformation.

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## 1. Introduction

The World Health Organization (WHO) declared COVID-19, which originated in Wuhan, a pandemic [1], spreading throughout the world since March 2020. The Peruvian government, through Supreme Decree No. 044-2020-PCM, declared a state of emergency and confinement for the entire population to safeguard life and health. This confinement affected all sectors, with the education sector being one of them. All activities at all levels of education had to be paralyzed, including universities where music is taught, a context that generated a huge challenge for teachers who found it necessary to explore new ways to carry out their activities.

In this context, universities have been focused on promoting and implementing virtual platforms for the development of academic activities remotely. Likewise, it was necessary to anticipate modifications in the curricular activities for which the teachers were directly responsible [2]. However, most of them did not have any experience implementing academic activities online. A reality that almost everyone faced was that most universities did not have enough resources to adapt to this new situation [3].

The investigations in the education sector during the confinement of 2020 have not shown as many results as in other sectors, such as health or the economy. This suggests that education was not affected by the pandemic, as most of the conducted investigations have not taken into account the effects of COVID-19 on university students [4]. Even so, until the first months of 2021, many studies accounted for the effects of COVID-19 on education, with digital tools serving as an automatic solution to pedagogical problems, while simultaneously creating a technological gap for low-income students [5].

Authors such as Mancha, et al. [6] argue that the digital skills of university professors have a significant relationship with the satisfaction of learning achievements in university students in the context of the COVID-19 pandemic. Unlike Iglesias and Pino [2], they mention that teachers have had the need to constantly modify their teaching methodological strategies, with one of the most applied active methodologies being Project-Based Learning and the Flipped Classroom. These methodologies were met with work overload and an appreciation that online learning had diminished compared to face-to-face learning. Additionally, Domínguez-Lloria and Pino-Juste [7] presented the results of their study during the pandemic, where they emphasized that music teachers have a low level of digital skills (knowledge and use), suggesting that training plans should be developed to address new technologies for music teachers. However, in the study by Jorquera, et al. [8], it was mentioned that the difficulties faced by teachers in the pandemic context served as an opportunity to improve their digital skills and learn about new technological-educational tools. The same applies to Palau, et al. [9], who affirm that teachers faced many difficulties in teaching during confinement; however, there were still no tools to virtualize practical music courses, making traditional teaching more efficient.

The general objective of this research is to analyze how music teachers transformed traditional teaching-learning processes into new virtual environments derived from the confinement of COVID-19 in four public universities in Peru. From this, three specific objectives (SO) emerge: SO, 1: Know the methodologies and resources used in the teaching-learning process. SO, 2: Analyze the effectiveness of digital tools, as well as the level of knowledge. SO, 3: Value virtual teaching and the future effects on educational practices.

## 2. Literature Review

### *2.1. The Teaching of Music During the Pandemic*

During the confinement due to COVID-19, the educational service had to be modified; face-to-face learning became virtual or online[1], becoming the new normal at all educational levels. Music teaching was affected because it relies on multimodal sensory and auditory-motor interactions [10]. Problems began to arise in continuing the educational service. On one hand, there were psychological issues, as the educational community was experiencing stress, fear, and anxiety. On the other hand, difficulties arose in terms of connectivity and the lack of technological and economic resources, which made it impossible for low-income students to have adequate internet access for online education. Likewise, educational institutions were not prepared to drastically transform academic activities, as there was no technological infrastructure or trained teachers [10, 11].

As it was about restarting academic activities in the virtual context, teachers began to express discontent due to the excessive workload [12] as it was about restarting academic activities in the virtual context, teachers began to generate discontent due to the excessive workload [13]. The context of the pandemic presented a different scenario from the one we normally experienced; it required original discussions of complex and unprecedented circumstances, one of which was the digitization of education at all levels, increasingly reducing the use of books, notebooks, and pencils, which have been replaced by digital resources [14].

Another difficulty that arises even in the current context is that universities have not been able to implement adequate resources for the new virtual tools, which have generated and continue to generate problems for students when implementing efficient online teaching [15].Consequently, the music teachers at the universities felt adrift during the first months of the academic year, unsure of how to apply virtual tools. They could only hope that the health situation would improve the following year, allowing a return to face-to-face instruction [16].

Therefore, the first tools developed for virtual academic activity were videoconferences and WhatsApp, which allowed students to access resources from home, although they could not interact with teachers. As time passed and technology advanced, educational practices transformed, leading to the emergence of a range of digital tools. Consequently, virtual education could not be limited to the mere transfer of knowledge and information; rather, it evolved to enhance the ability to produce knowledge [17]. That is, the student must put into practice their personal abilities and skills as a self-taught

[1] For this study both terms will be used as synonyms.

individual, considering autonomy, discipline, and responsibility. In effect, in virtual education, the elements of space and time recede into the background, since the schedules and place of work do not condition the student's training. On the contrary, everything relies on self-learning [11].

*2.2. The Music Teacher During the Pandemic*

The social, economic, and emotional context of teachers creates a challenging environment to navigate. This has prompted several researchers to discuss the issue, as it impacts teaching in general, even in developed countries [18]. Labor oppression causes teachers to experience stress for the reasons explained above (work overload, lack of resources, among others). However, the most significant factor is the low economic remuneration of professors in Peru, which makes this career an unattractive choice for those who decide to study at the university [19].

The consequences of these problems that have developed over the years often converge in professionals who abandon the formal teaching career shortly after entering [20]. On the other hand, the large labor desertion due to health, which is affected at a socio-emotional level, such as depression or Burnout syndrome[18], results in a significant emotional overload that generates physicochemical changes activating the secretion of hormones such as catecholamines and adrenaline [21]. In this situation, music teachers from Peru and other regions are included, who contribute to the comprehensive training of students day by day. However, due to salaries that do not meet the needs of their environment, they are forced to work in more than one institution to access a full working day and thus gather the economic income necessary for their livelihood [22].

Understanding the emerging problems caused by COVID-19, and taking into consideration that this context could be repeated at any time [23], it is extremely important to include digital skills in the training of future teachers, which allows them to better face virtual educational environments [7], especially if the world that includes various educational regimes is digital [24]. Thus, when teachers return to a face-to-face environment, they must have multiple approaches to competencies to improve the deficiencies of the knowledge constructs acquired during the rise of the pandemic. They must have a role that is not only pedagogical but also guiding for the student, to compensate for the emotional impacts of COVID-19 [25].

*2.3. Digital Transformation*

The fact that digital skills are not considered in the study curriculum means that educational practices do not take technology into account at the level it deserves Gruzina, et al. [26]. Thus, for a teacher to master digital skills, it is not enough to use some technological tools; this reality fails to innovate the teaching-learning process positively [27]. The key issue is how to give these resources and tools a positive utility because the most innovative elements cannot contribute anything if they are not handled thoughtfully and with a specific purpose [28].

Hence, it becomes important to make changes in the pedagogical and methodological approaches so that it is possible to understand that technological tools allow for the improvement of meaningful learning and are not only thought of as a means of access and transmission of information [29]. Therefore, the only way to guarantee the use of new technologies to improve teaching and learning is for future professionals to possess digital skills in their training [30].

Nowadays, the job market demands professionals who have been trained with adequate digital competence, which is key for active labor insertion [31]. In this understanding, the use and mastery of digital technologies become the only tools that help maintain and survive in a society that appears fully digitized [32]. This fact has led to a significant advancement in the educational context, giving rise to new methods of learning and experiences that have never been applied before [33]. In this manner, the use of these resources should serve to promote autonomous, creative, and critical thinking [34].

For this reason, authors like Gisbert, et al. [35] state that the training received in digital tools is focused on elementary literacy, distancing it from the disciplinary and pedagogical field. Therefore, the strengthening of digital skills becomes important in the contemporary world and should be established at all levels of education [36]. Additionally, the improvement of didactic knowledge through virtual platforms demands two basic skills: the ability to self-direct learning processes and the efficient management of information and communication technologies [5]. However, some authors argue that professionals do not fully develop their basic skills, creating a gap in their ability to assimilate and achieve competencies based on the use of technologies [37].

## 3. Methodology

The methodology used was from the interpretive paradigm[2], with a qualitative approach, under the phenomenological method[3], as it was possible to obtain a deep understanding of the influence of COVID-19 on the transformation of the teaching-learning process in music [40]. The collected data was organized based on the contributions of the teachers' experiences, which allowed us to conduct a detailed investigation of the supposed phenomena [41, 42].

The population consisted of music teachers from four public universities in Peru, where professional musicians are trained: 34 teachers from a University Institution located in the department of Huánuco (30 men and 4 women), 84 teachers from a University Institution located in the department of Lima (61 men and 23 women), 24 teachers from a University

[2] According to Martínez [38] this paradigm "is based on the conception of learning according to which the individual learns through interaction with the physical, social and cultural world in which he or she is immersed. Thus, knowledge will be the product of one's own intellectual work and the result of the individual's experiences from birth" (p.4).
[3] For Fuster Fuster [39] this method "leads to the description and interpretation of the essence of the lived experiences, recognizes the meaning and importance in pedagogy, psychology and sociology according to the collected experience. The principles of phenomenology and its phases: previous stage or clarification of presumptions, collecting the lived experience, reflecting on the lived experience or structural stage and, finally, writing-reflecting on the lived experience evidenced in individual and group physiognomy or also called phenomenological text" (p.202).

Institution located in the department of Arequipa (14 men and 10 women), and 18 teachers from a University Institution located in the department of Puno (17 men and 1 woman).

The sample was composed according to convenience, following the criteria of territorial heterogeneity, ages, and teaching areas (theoretical, theoretical-practical, and instrument courses) to collect reliable information, for which the following participated voluntarily:

**Table 1.**
Research sample.

| Institution | Location (Department) | Number of teachers | Sample |
|---|---|---|---|
| University | Huánuco | 34 | 4 |
| University | Lima | 84 | 11 |
| University | Arequipa | 24 | 3 |
| University | Puno | 18 | 3 |

**Source:** Web page of the university institutions.

The teachers participated voluntarily in the study and consist of 12 men (57%) and 9 women (43%); of these, 7 teachers (33%) teach theoretical courses (Music Theory, Harmony, and Counterpoint). Nine teachers (43%) teach theoretical-practical courses (Musical Language), and 5 teachers (24%) teach instrument courses. Their ages range from 28 to 59 years.

The data collection technique and instrument were the structured interview to achieve the documentation of the participants' daily experiences [11, 43]. It consisted of 12 questions validated by experts and grouped into three dimensions: transformation of music education, digital tools, and the return of music education to presentiality. For the elaboration of the instrument, the following steps were followed: formulation, pilot testing, revision, and adjustments [43]. Due to the health and social situation faced, the interview was conducted in a virtual or online format, with written responses, allowing the interviewee to provide precise wording. This approach facilitates a greater level of freedom and reflection, resulting in more elaborate and in-depth answers. Currently, the virtual interview emerges as a novel and reliable method, enabling the continuation of research work while improving logistics in both spatial and temporal terms [44].

### *3.1. Procedure*

In the first instance, contact was made with the collaborators of each of the university institutions via email. After explaining the intention of the research, they gave voluntary acceptance to be interviewed and allowed the use of the information collected for the purposes of the investigation, maintaining anonymity to highlight the particularities of the phenomenological method, as Creswell [45] describes. He refers to the fact that, after conducting the interviews with subjects who have experienced similar situations, we will be able to accurately understand the characteristics of their experiences in order to describe the phenomenon as it occurs.

Next, we proceeded to the data analysis, which consisted of generating a matrix from the questions and responses of the collaborators. For this, the ATLAS.ti software version 8 was used for qualitative data analysis. For our analysis, we took into account [46],who proposes:

> In the first section, the need to grid the transcribed interviews as part of the production process of qualitative data for analysis is highlighted. Secondly, it synthesizes the moment that Strauss and Corbin [47] have been designated as open coding, which involves conceptualization and classification operations of phenomena. Next, the operations related to linking concepts to elaborate hypotheses are presented, which corresponds to the moment of axial coding in the Strauss and Corbin proposal. Then, the procedures of thematic analysis and analysis by cases are mentioned, which, although in practice, can be carried out simultaneously with the coding, constitute a different analytical moment. Finally, a brief reference is made to the final phase of synthesis (p.203-204).

For this, the appropriate codes were added based on the data recovered, totaling 12. Likewise, notes and observations from the researchers were used to guide the process. Finally, as stated by Strauss and Corbin [47] (as cited in Cohen and Gómez Rojas [46]), the information has been ungrouped (open coding) to later regroup it (axial coding) and gradually approach the categories and codes that contribute information in a significant way for the investigation, after which we proceeded to order the data obtained according to the objectives of the study.

## 4. Results and Discussion

At the beginning of the confinement resulting from COVID-19, the development of academic activities in public universities in Peru came to a complete halt. Many of them were unable to restart their activities virtually due to a lack of technological infrastructure; there was not a sufficient internet network, electronic equipment, and, most critically, the mastery and use of some technological tools. Teachers had to reorganize their educational practices around the virtual format, immediately abandoning face-to-face classes. After constant meetings to provide an immediate short-term solution, most universities made the decision to resume academic activities, for which the development (methodological and curricular) of their courses had to be transformed. It is worth mentioning that during the year 2020, the participating teachers stated that most of them had critical moments not only due to the concern of the classes that were constantly changing guidelines by the authorities but also due to the stress caused by the pandemic, which made it difficult to carry out a comprehensive analysis.

For the first semester of 2020, there were delays in its start; some universities started in April, others in May, and others in June. Even so, it was thought that classes would be restored as soon as the health emergency decreed by the central government ended, so the universities established work formats. The synchronous (virtual interaction with the student via

Zoom, Meet, Microsoft Teams, Cisco Webex, etc.) and the asynchronous (via virtual platforms such as Google Classroom, Q10 Academic, Moodle, etc.). For the development of the activities, constant training for teachers had to be carried out. In this first stage, there were problems in academic development, student dropout for reasons of connectivity, sick relatives, etc.

For the second semester of 2020 (August-December), the health emergency in Peru had its maximum peak in infections and deaths, and the only way to schedule academic activity was virtually. For this, the universities improved several aspects to be able to project the educational service, such as the capacity of internet networks, and ICT refresher courses were provided to teachers and students, etc.

For the first semester of 2021 (March-July), there was already some experience in terms of virtual academic activity; teachers focused more on synchronous activities and having more virtual contact with the students. For the second semester of 2021 (August-December), the confinement was partially lifted, since the state of emergency continued; therefore, it was not possible to think of returning to face-to-face activities. The data shown below are those collected in the said period.

### *4.1. Music Education Transformation*

At the beginning of the second semester of 2021, teachers expressed their positions regarding virtual classes based on their experiences from previous semesters. Teachers of theoretical courses stated that they had no problems in this regard, while those of theoretical-practical courses mentioned that they did not encounter any risk situations during theoretical hours. However, during practical hours, there were certain inconveniences. Teachers of instrument courses reported many deficiencies, and there were differing opinions regarding the methodology.

> “I did not make any changes regarding face-to-face classes. I managed to use the same methodology as always in the virtual classes; the only positive aspect is that you can do collaborative work online” (Theoretical Course Teacher). “For me, it was complicated. I had to conduct individual classes with everyone because you cannot work with more than two students at the same time. In terms of methodology, which was primarily focused on practical work, there was a significant difference compared to a face-to-face class. The fundamental problem was the latency that Meet had” (Instrument Teacher).

In a few words, the teachers have done the same work in person, with the difference now being that of a videoconference. However, a small group of teachers mentioned that they had difficulties migrating to the virtual format, which produced some changes in their methodology.

> "For me, technology has been an unconditional support tool for developing my classes. This has changed my methodology when conducting my sessions and evaluations" (Theoretical-practical Course Teacher).

An outstanding contribution was the creation of home videos not only by the teacher but also by the students. These were mostly carried out for evaluations and served as motivation and feedback for the students.

> “When recording home videos with my cell phone or by other means, I feel that the student makes a greater effort to present the best version of the work he is doing. This has led to considerable improvements in a short time” (Instrument Teacher).
>
> "The students told me that they record the song repeatedly, listen to each version, and try to correct any errors that may exist. This process helps them carefully consider those who are studying when they send the best version, and they feel satisfied with the work done" (Theoretical-practical Course Teacher).

Home videos allow the teacher to evaluate the artistic potential of the student without any situations that occur in the context, such as stress, nerves, mood, etc.

> "Through a video, we can objectively evaluate that no symptoms of nervousness or any other moments that the student is experiencing are observed" (Instrument Teacher).

The act of presenting home videos does not allow for the possibility of editing them or making improvements to what has already been recorded.

> "In a home video, you can appreciate reality without alterations, the correct articulation of the notes, their heights, voice timbre, and so on" (Theoretical Course Teacher).

These findings agree with Iglesias and Pino [2], as their study clearly shows the different positions of teachers regarding the methodology used. For some, it means implementing the same face-to-face strategies through videoconferences, while others attempted to modify their strategies based on active methodologies. Additionally, Jorquera, et al. [8] mention in their study that the challenges of confinement have prompted a greater engagement with technology.

### *4.2. Digital Instruments*

Regarding the tools used, teachers mention that each university has chosen one or two, depending on the development of the class:

**Table 2.**
Use of instruments.

| | | **Instruments** | |
|---|---|---|---|
| **Institution** | **Location (Deparment)** | **Synchronous** | **Asynchronous** |
| University | Huánuco | Zoom | Google classroom |
| University | Lima | Microsoft teams | Microsoft Office 365 |
| University | Arequipa | Google meet | Moodle |
| University | Puno | Google meet | Aula virtual Laurasia |

**Source:** Interviews with the participating teachers.

The choice of platforms was mostly approved by the Academic Vice Chancellors, based on the technological infrastructure conditions of each university.

> "By agreement of the University Council, by 2021, the Google Meet platform will be used for synchronous classes, as this platform does not consume a lot of data compared to others and is more comfortable to use. For the asynchronous component, the institutional platform that just came into operation in 2021, the Laurasia virtual classroom, will be utilized" (Teachers from Puno).
>
> "To prevent students from being overwhelmed by managing various platforms, the university authorities decided to standardize a single platform. In this case, Google Meet was chosen for synchronous classes because it was easier for all teachers to manage. For asynchronous work, the Moodle platform was utilized" (Teachers from Arequipa).
>
> "Our university purchased the Zoom license for teachers, allowing them to conduct synchronous classes with complete peace of mind. Google Classroom was utilized for asynchronous classes" (Teachers from Huánuco).
>
> "The university already had a license for Microsoft Office 365 and Microsoft Teams, so we are working through that platform" (Teachers from Lima).

Each platform had its advantages and limitations, but the use and management of them were relatively comfortable for teachers of all ages. However, technical problems arose, such as the lack of internet connectivity for students, even though the universities provided them with monthly bonuses of megabytes, and the lack of connection points in rural areas.

> "Despite a year after the pandemic, my students continue to experience connectivity problems; they frequently enter and exit the class, which disrupts and distracts from the development of the sessions. This is due to the fact that most of the students have migrated back to their places of origin, many of which are located far from the city" (Teachers from Puno).
>
> "I am accustomed to not having classes continuously because several students run out of megabytes and have to leave home to recharge or wait for the university's connectivity bonus" (Teachers from Puno).

Also, Palau, et al. [9] in their study clarify that some institutions have determined the digital platforms and guidelines suggesting certain resources, while in others, the teachers resorted to resources that they found at hand. Likewise, Iglesias and Pino [2] state that " It is not enough to implement a virtual classroom and upload content to the network; it is not the machines that teach, but the teachers who teach through the machines. ICTs are just another tool, like a book, a blackboard, or a pencil" (p.189).

### *4.3. Musical Education Back to Face-to-Face*

Despite all the difficulties in the development of virtual classes, a group of teachers considers these changes positive due to the advantages they offer. However, other teachers state that while virtuality as a tool is beneficial, it is not suitable for the training of professionals.

> "It is true that it took us to another world, and now this system is going to stay with us. The advantage for all is that we save time" (Theoretical Course Teachers).
>
> "In-person teaching is very necessary and important because I can observe in depth the progress of the student, correct postures, tuning, fingering, etc. While in the virtual setting, at most I could see the results of self-learning" (Instrument Teachers).
>
> "I see that we must understand how to integrate technology into our daily practices, not as something indispensable, but rather as a tool that helps facilitate mixed work as needed" (Theoretical-practical Courses Teacher)

For the year 2022, the Peruvian state projects a return to face-to-face education after two years of health emergencies. Some teachers share their insights on the new teacher profile, while others discuss the incorporation of technology into the curricula, creating a new musical educational model that aligns with contemporary times.

> "The new profile of the music teacher must be approached from a transformative perspective, with critical capacity and a guiding role towards the student, along with training in digital tools that are useful in teaching" (Theoretical Course Teachers).
>
> "The integral formation of students is important in these times; for this reason, we must include digital skills in the curriculum so that students have the tools to defend themselves in the job market" (Theoretical-practical Courses Teacher).
>
> "Definitely, a new educational model should be considered—one that aligns with our times, where technology is integrated. Nothing will be the same as before; it is time to update the models of past centuries. This experience has served us well in rethinking the teaching and learning of music with one of our greatest allies: access to online information" (Theoretical Courses Teachers).

Hence, Sinche, et al. [25] allude to the new post-pandemic normality, where university teachers could generate change as a result of the pandemic's difficulties, influencing the construction of knowledge and the use of technologies. For Guarniz, et al. [5], the digital competencies that enable students to engage in their self-training must be cultivated. Mancha, et al. [6] conclude that if university teachers apply and develop digital skills positively, students will be satisfied with their learning. For Alises-Camacho [48] as cited in Domínguez-Lloria and Pino-Juste [7], the training of teachers in digital skills could favor the creation and optimization of training plans.

## 5. Conclusions

Despite the experience of 2020, teachers still show divergent opinions regarding the transformation of their pedagogical practice. Of the interviewed teachers, some consider that videoconferences are similar to face-to-face classes and that they have not had the need to change their methodology. There is another group of teachers who state that going virtual was not

complicated; for some, technology has represented unconditional support for the development of their classes. However, a tool that is of great help to teachers is home videos, which they used when evaluating their courses. This tool helps to improve student achievement, as well as providing an objective evaluation by the teacher.

On the other hand, university institutions agreed to use a single platform for the development of their academic activities, with Google Meet being the most used for synchronous teaching because it is very affordable in terms of management, adaptable to any type of equipment (cell phones, computers, laptops, etc.), and, above all, it does not consume much in terms of megabytes. Other platforms used were Zoom and Microsoft Teams, which are easily accessible. For asynchronous classes, each university institution found it convenient to use different platforms; some already had the institution's own virtual classrooms, while others used platforms such as Moodle, Microsoft Office 365, and Google Classroom. However, a fact that caused problems was the lack of connectivity on the part of the students, as due to the pandemic, they returned to their places of origin, and in many cases to rural areas where there are no connectivity points. Likewise, the low resources to have sufficient internet to carry out their classes persisted, even though the authorities of the universities provided support with internet vouchers.

Finally, technology has come to stay in the educational system. The opinion of several teachers is that technology will not replace face-to-face classes, but we must introduce technological tools as a means to enhance the integral formation of the student. It must include digital competence in the study curricula, and music teaching-learning must be rethought to achieve a new educational model that aligns with the new times, where "virtual environments" are considered a potential ally.

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