



RESEARCH ARTICLE

ONLINE EXPERIENCE IN TEACHING MUSICAL PRACTICE IN TIMES OF PANDEMIC

***Dr. José María López Prado and Dra. Beania Salcedo Moncada**

Universidad Autónoma de Nuevo León, México

ARTICLE INFO

Article History:

Received 20th February, 2021
Received in revised form
15th March, 2021
Accepted 18th April, 2021
Published online 20th May, 2021

Keywords:

Violin, Cello,
Online Teaching, Confinement,
COVID 19.

ABSTRACT

This study examines the impact of music education through digital platforms, during the sanitary confinement provoked by COVID-19, the sample consists of two violin teachers and one cello teacher who give lessons at higher education institutions in the United States, Spain and Mexico. A narrative-phenomenological methodology was used to analyze the scope, aspects and essence of their teaching experience. The impressions and practices manifested and summarized through colloquial interviews show the advantages and disadvantages of online education in musical performance. This analysis helps us understand both the limitations and advantages of online music education for training expert performers. Based on the collected testimonies, this article aims to contribute to the development of the teaching-learning process in contingency stages in which face-to-face education is not recommended.

INTRODUCTION

An indefinite period of national contingency begins in March 2020 caused by a disease known as COVID 19. This disease is caused by a virus called SARS-Cov-2 coronavirus that appeared in the city of Wuhan (China) and has spread to the rest of the world. The World Health Organization declared it a global pandemic and on its website states that there is currently no drugs authorized to treat COVID 19. After China, the most affected region is Europe, specifically Italy followed by Spain. The first patient registered in Spain with coronavirus-19 was known on January 31. The growth has been gradual, but it was from March 8 when that growth of coronavirus-19 cases was suddenly uncontrolled, especially in the Community of Madrid. A day later, on March 9, the Health Ministry had to change the scenario on which it was working to contain the epidemic, going to a level of forced containment. That same day, and in a coordinated manner, the Community of Madrid decided to close all educational activity in the region (Arroyo, 2020). Baker and Fink (2020) state that on January 15, at the South Seattle International Airport, a 35-year-old man returned from visiting his family in the Wuhan region., days later, that man was the first person in the United States that tested positive for Coronavirus. Mexico's Federal Government (2020) enables a web page where it monitors and offers general information on the pandemic.

There, it is stated that COVID 19 disease is transmitted from a person infected with the virus to another through the eyes, nose, or mouth when coughing or sneezing. Therefore, the Federal Authority determined a cessation of non-essential activities, in order to control the number of infected people to prevent the saturation of the Hospital System. The most recent case of a globally experienced epidemic (in a smaller scale) was H1N1 influenza. The Federal Government (2010) established the School and Health Program (Programa Escuela y Salud) through which, on April 24, 2009, the Public Education Ministry in coordination with the Health Ministry, announced the decision to suspend academic activities to prevent massive contagion. Educational activities returned to normal between May 11 and 18, 2009. Currently, the risk period for the new Coronavirus is expected to be much longer, therefore the authorities mandated for teaching activities to be continued online. For which, both the teacher and the student need to have at least internet service and a device, which can be a cell phone. Access to the internet and sufficient digital resources is not something that all families will have at the time of the change to the online modality. The lack of digital infrastructure and training for its proper use was suddenly evident (Crawford et al 2020). In Mexico, the loss of employment of the heads of families has caused the abandonment of some students, who have had to work to support economically at home (Monterrubio & León, 2021). Zhang et al (2020) reveal a similar state in education in China. The objective of this study is to examine the impact that the online class model has had on an international sample of three teachers during this first stage of COVID 19 contingency.

*Corresponding author: *Dr. José María López Prado*,
Universidad Autónoma de Nuevo León, México.

The results presented in this article provide a reflection on the validity of the online model in formal teaching of stringed instruments and serve as a feedback model for a better functioning of this teaching practice. The COVID 19 quarantine reopens the debate on the validity of online education and particularly in music performers. This time not as an alternative to face-to-face education but as the only option to continue academic activities.

ONLINE EDUCATION VERSUS FACE-TO-FACE EDUCATION: Albert (2015) considers that for some students and teachers, online education shows some benefits with respect to face-to-face education, since it allows them to keep their job and have schedule flexibility. On the other hand, face-to-face studies often require a change of residence and saving time in commutes to the study center is another advantage considered when choosing the online model. In addition, the networking with the teacher is considered by some students as an opportunity to build a good image that may generate a recommendation for a job. Among the factors that influence the decision to choose a face-to-face or online education model are the student's age, their socio-economic background and each applicant's family obligations. Interaction with teachers and socialization with learning partners are components that undergraduate students value when deciding on a face-to-face education model.

Online educational offer has grown a lot in recent years, especially in graduate programs in music education. Riley (2013) points out that the use of applications like Wild Chords to teach guitar to beginners has been useful for many teachers of music education in high schools in the United States. When extrapolating the perspective of music teachers from compulsory education schools to the training of performers in Conservatories, Universities or Schools of Higher Education in Music, circumstances are different. The pedagogy of future professionals in musical performance demands some requirements that online education does not provide. Navarro, Lavigne and Salgado positively value the virtual teaching of an instrument as part of artistic training in young people but find it limited to the training of professional performers (2009). In the same way, teaching a musical instrument to a beginner is very complicated due to the need for physical contact in terms of hand placement, instrument position, and body posture (López & Lago, 2013). To carry out online classes in musical performance, a fluency in communication is required, because it is a learning process in which the teacher and the student interact in real time, something that the internet service does not always offer. According to Koutsoupidou (2014), instrument teachers consider online teaching deficient due to sound cuts caused by the low performance of hardware and software.

However, not all are drawbacks in the non-face-to-face mode, among the advantages offered by online education could be considered being able to repeatedly see the teacher's instruction and that it does not become a temporary act (Lago Castro & Ponce de Leon, 2012). An alternative to real-time learning is one in a deferred time, for this model the student provides the teacher with videos of his or her execution and the teacher after reviewing them can give feedback either in writing or by call. With this formula there is no risk of interruptions and it includes a very valuable analysis mechanism for both parties.

According to Cayari (2018), the YouTube website offers a great opportunity to expose musical performances to a large audience. In this period of contingency, it has been widely used by famous artists both at an artistic level (Yo-Yo Ma, 2020) and at a didactic level through master classes (Vengerov, 2021; Moser, 2021). However, Güzel et al (2020) consider that in the teaching of the violin the classes given by YouTube are beneficial but insufficient and should be complemented with individual teaching. Aksoy (2015) and Server (2014) defend the beneficial contributions of videos as complementary material for learning an instrument. Therefore, for instrument classes, presence is required for proper operation and online classes do not replace traditional teaching, they only complement it (Martín et col 2020).

MATERIALS AND METHODS

Prior to this research, we, the authors, are skeptical about the value of online education when it comes to training expert performers. For this study, a narrative-phenomenological research design was used. Bogden and Biklen (cited by Hernández-Sampieri, Fernández-Collado and Baptista-Lucio, 2010) point out that in phenomenological design it is intended to recognize people's perceptions and the meaning of a phenomenon or experience. The teaching experience during COVID 19 was analyzed on an international sample, from its beginning to June 1, 2020. Three interviews were had with string instrument experts, a violin teacher who teaches in Mexico, a teacher of violin who teaches in Spain and a cello teacher who teaches in the United States. The phenomenological observation was conducted by semi-structured colloquial interviews through videoconference, which were recorded to be observed repeatedly. "These are open-ended questions to obtain data on the participant's meanings of how individuals conceive the world and how they explain or give meaning to important events in their lives" (McMillan and Schumacher, 2005: 458). The interviews were carried out by videoconference in Skype and by video-call in Messenger. Phenomenological reduction measures were applied to achieve the highest degree of impartiality when registering reality and an investigation protocol based on audio and video recordings.

The storytelling contained in the protocols were studied trying to filter prejudices and basic structures of relationships were discovered in the subjective experience of each participant. To continue, the general structure of the participants was described by superimposing the structure of each protocol, and finally the participants were interviewed again to release the results of the research and new relevant aspects appeared. With a qualitative approach, an inductive content analysis was performed. After the analysis, data were obtained to establish categories and main ideas. The interviews were transcribed manually after being conducted. This study can be replicated with participants from other countries and knowledge can be strengthened based on lived experience to improve the teaching-learning process. Finally, discourse analysis was used to capture coincidences that improve this educational practice.

RESULTS

The results of this research show data about the teaching experience in a first stage of confinement and the implications after the confinement caused by COVID 19.

This study can serve as a basis for future studies in which expert experiences are shared which may improve the teaching-learning processes in confinement stages.

TEACHING EXPERIENCES DURING COVID 19 CONTINGENCY: Sofia is a violin teacher at the Manuel Carra Conservatory in Malaga, Spain and when asked about her experience with her classes at this stage of the contingency, she tells us that, given that it happened in the middle of the course, when it comes to the Internet, "we have had to use all the technological resources, all the possible platforms...In my conservatory, in a matter of a very short time they set up a virtual classroom". For the teacher, the main problem has been connectivity. "The biggest problem I have seen is the internet connection, not all places and not all students have it in the same way." Sofia considers that there are many aspects such as sound quality, phrasing, nuances or dynamics that cannot be worked on in this online modality. In her classes with children she has also experienced that parents have become more involved by being at home at all times and have helped students to achieve better performance. With regard to schedules, she has been flexible because of this unusual situation and has observed exemplary conduct appealing to their professional ethics. WhatsApp has been the platform that has pleasantly surprised her, since due to poor connectivity she had to keep changing to achieve good communication, with Virtual Classroom, Skype or Messenger.

Regarding the stress generated by teaching these classes online, she argues: "The first month is more stressful, then it is a matter of getting used to it." She also notes that in the first month, all the teachers left a lot of homework, but over time they relaxed after getting used to the new model. Regarding teacher training for this online education, she considers it favorable since, although most teachers are familiar with technology, there is a small percentage of teachers who would need this support. On the other hand, she mentions that due to the speed at which events occurred, the entire process would need to be regulated. "Not as something spontaneous in which you give them some classes on Skype, that is goodwill and the good disposition of the student." Regarding the measures to be implemented to improve the classes, teacher Sofia expressed the need for better internet service and expressed her concern about the future of large groups. "We are big losers, the culture is a big loser, what is going to happen in the orchestras? what is going to happen with the orchestral subject and the choir subject?"

Zogbi is a violin teacher at the Coahuila Desert Philharmonic Orchestra, in Mexico. Regarding his experience in this contingency period, he tells us that he was already used to teaching remotely. Due to COVID 19, there was a lot of unemployment, so some students had trouble paying for violin classes. However, the teacher had the will not to interrupt classes for this reason. Sound represents a barrier in this way of teaching, both for the teacher and for the student, since it is important for the latter to take the teacher's execution as an example, for this reason Zogbi expresses: "I strongly concentrate on more technical things, in terms of tuning, in a matter of fingering. There are so many other things that can be attacked through the remote classes." On the other hand, he complains about the connection that is really bad and communication gets cut off. He also believes that it is very difficult to teach introductory violin so he does not try it, due to the contact that is needed with the student.

Another problem that has been faced in this period has been the fact that the students do not have pedestals, making it very uncomfortable and the class gets interrupted. "They are putting it on the books or on the music stand and it keeps moving because they never imagined that they would need it." The WhatsApp video call has definitely been the best one. Sometimes it is necessary to play with the student and the student realizes his mistakes, taking the teacher's execution as a reference, however, it is complicated under this model because there is latency. "I'm playing and he listens to me a few seconds later, so we hear each other in delay." In spite of everything, remote teaching is an advantage, if this had happened 10 or 20 years ago that the Internet did not exist, education would have been completely paralyzed. With regard to the stress generated by this form of knowledge transmission, he manifests the comfort of some students to choose the location they want within their home, even though it can never be compared to classroom teaching. He accommodates the schedules according to the convenience of both parties. Apart from the pedestals, he recommends the use of headphones to avoid latency. For this type of music education, he recommends implementing the use of videos since it is possible to better appreciate the sound without stopping.

Regarding the changes that this type of remote lessons can generate, he contemplates the fact that the community will lose fear, "because before we used to say it doesn't work, because we had a reluctance to take classes online. I see a violinist who is in Germany, and I do not have the possibility of going to Germany, but I can tell him: hey, can you give me a class online, I pay you via PayPal. You have access to other types of teachers that you normally cannot count on."

For Zogbi the way of teaching will continue to be mixed, both face-to-face and remote. "It is also a matter of getting used to the device and thinking that you don't hear it that way, that's how you hear it on the device. Progressively you get use to listening differently".

Boris is a cello professor at Ohio University. "When the contingency started we were all very surprised and wondered how it was going to work." On both sides there is a mutual intention to make things work. As an instrument teacher in an internet class, the sound comes with delay, so a 55-minute class of time is shortened to 45. The natural dynamics of question and answer is more difficult. "After the first week of online class I realized that I had to be more specific to find the words and write what I have to say. There are things that can be worked on, there are others that we are going to leave to the conscience". Remote classes started around March 20th. Spring break lasted a week and classes had to be prepared online for a week. Several universities left to the discretion of the student and the tutor to decide if the most complicated subjects could be graded. "To be considered as passed or not passed instead of a grade with a letter or number, to avoid negative consequences." Boris had to organize his schedule. "Suddenly I found myself with much more time than I had. The time I used to go to university, the time between classes and now suddenly I realized the risk we run of wasting time. I arrange a regimen to wake up and sleep at the same time and accommodate my rest or meals." Teacher Boris considers that he had connection problems and when asked if there was a lack of work tools, he mentions: "More than the equipment, I have classes with a bad connection, Skype had to be replaced by FaceTime and even with a phone call to send a text".

The University enabled a platform to control the quality of teaching. It is used for written work, for recordings. "Many teachers chose to order recordings and spend class time doing analysis. Often the recording exercise is painful for players, but when they have to do it constantly, it has a very positive outcome." The University provided many stress management tutoring programs, especially for 18-19-year-old students who may be emotionally fragile. It is already clear that the fall semester will be online, so the summer semester has to serve as feedback for the next semester, to face a second stage of this situation that is no longer new and seems to not leaving soon. Regarding measures that could be implemented to improve educational practice, Boris considers that the procedures have been very good. "More than inventing something, it is systematizing the strategies, to create a more unified tool among the institutions that teach art."

He expressed his concern about how chamber music or large ensembles will be made. Regarding the changes that can be generated in the way of teaching, the specialist contemplates that it will teach him to be much more organized, to appreciate class time more, to be more precise with the objectives and to allow himself to trust in the work of the student. "Definitely for instrument and ensemble classes need to be in person at all times, human contact is very different, but we have the great opportunity to discover new teaching-learning tools." "An advantage that surprised me is that since the camera is static and the information arrives with a little delay, it allowed me to find posture problems very clearly. It was like having a mirror, if we remember among the sacred objects of the Japanese monarchy there is the mirror, this is the opportunity to see ourselves in a mirror through Skype or Face Time to see things that are not necessarily bad but that can be changed"

DISCUSSION

The problem addressed in this study reflects the impact that online teaching has had on two violin teachers and one cello teacher and their effort to achieve optimal results in this obligatory distancing between teacher and student. The following descriptive categories were generated: Teaching experience, internet connectivity, teacher training, curriculum retraining, random sound, educational stress, time flexibility, musical groups, public presentations, classes for children and beginners, and changes and measures to implement.

TEACHING EXPERIENCE: The teaching experience for Boris and Sofia was very surprising since in a matter of days they had to change from the face-to-face to the online model and the change from one modality to the other was so fast that a longer planning time would have been desirable. When comparing the remote classes with the face-to-face classes, the three participants agreed that the face-to-face class for the lessons of their musical instrument are not substitutable by the virtual model. However, Zogbi points out that if this contingency had occurred ten years earlier, it would have been difficult to keep track of the students' work. In order to be able to carry out the virtual pedagogical activity, both the student and the teacher must have internet service and a device to make the class possible. In this aspect, the socio-economic level plays a role, since it is necessary to have the tool and that the number of members in the house sharing the same needs, time and space do not interfere in the class development. The evolution of mobile phones has been a great help in this stage of virtual communication.

VIRTUAL CONNECTIVITY AND RANDOM SOUND: The connectivity for the three interviewees was something traumatic since the sound kept cutting off, something that is not customary in face-to-face classes. Among the desirable elements by teachers for an improvement of online classes are better connectivity and a maintenance of fluency and sound properties. This same aspiration was previously expressed in a study regarding the value of videoconferencing in instrument lessons. Dammers (2009) assumes that the internet will improve in the future, thus avoiding delays and interruptions in terms of sound and optimizing the quality of the image. Ten years have passed since this forecast and we continue with the same circumstances, so in the short term all the means at our disposal will have to be used to complement the synchronous classes. Video delivery support with subsequent analysis and feedback is something Boris and Zogby used.

FLEXIBLE SCHEDULE: Zogbi points out that it was an advantage for the student to be able to choose the location in their space to receive the class and, together with Sofía, they pointed out the ability to have greater time flexibility to agree on the class. Dammers (2019) states that the commute distance and the comfort of a personal space will be advantageous elements to be considered by educators in their preference, habit and online education adaptation.

EDUCATIONAL STRESS: Koutsoupidou (2014) proposes the implementation of online tutors to guarantee the quality of the programs and an improvement of the online environments to cover the socio-psychological gap. This gap is likely to create stress for the participants in the teaching-learning process. At Ohio University, where Boris works, programs with this psychological support were implemented for students because of their age range could make them more vulnerable. Sofía tells us that the stress was generated the first week, but then they got used to the new system.

CURRICULUM ADAPTATION: Sofia and Boris warn about the need for planning and that everything is properly regulated. We must be prepared for this type of contingency at the educational level. In the same way it happens in Mexico: "there was no action plan for this type of situation either, despite the 2009 experience with the AH1N1" (Fernández, Herrera, Hernández, Nolasco and de la Rosa, 2020). For Zogbi, who was giving online classes, it did not mean much change.

TEACHER TRAINING: Teacher training is important for Sofia and Boris because the age of teachers can vary greatly and some lag behind technological evolution. According to Prensky (cited by Day, 2018), there are digital immigrants and digital natives, the former was born and educated before the rise of new technologies, and the latter were born and educated after them. Dorfman (2016) points out that schools should place more emphasis on in-service training for technology programs and promote opportunities for cooperation between teachers and trained staff. The experience we had in 2011 with the H1N1 influenza did not serve to implement action measures for future contingencies.

CLASSES FOR CHILDREN AND BEGINNERS: Physical contact is necessary especially in the early stages of learning, when you want to correct the posture of the arch, to point out a muscle that is tense. Distance forces the teacher to give a much more descriptive class and to choose the appropriate terms so that the students, who in many cases are children, understand

what the teacher wants to say. One of the advantages that Sofia expressed was the fact that the confinement brought about a closer relationship between the parents and their children, who stayed to watch the class and tried to help their children to assimilate the explanations of the teacher. This act made the children feel more motivated because in these early stages of learning it increases significantly when parents are involved in the process (Anderson and Barton-Wales, 2019). We will have to be much more graphic as Sofia says, since the physical contact with the hands of the student or her instrument that previously contributed to the understanding of the explanations will not be recommended for some time.

MUSICAL GROUPS AND PUBLIC PRESENTATIONS:

The participation in groups of different numbers and the presentation of the work in public is an essential part in the training of a performer. Boris and Sofia expressed their concern about how these essential activities can be recovered. Piñon (2020) points out in the newspaper *El Universal* several studies regarding the risk that musicians are exposed to on stage, such as that the Vienna Philharmonic Orchestra that sees it as highly improbable to play under these circumstances. Also, the Freiburg Institute of Medicine for Musicians, University Clinic and Higher School of Music stipulated two meters of distance as a minimum sufficient measure for wind players and singers and that concerts should be held in large auditoriums or temples that are regularly ventilated. Finally, the TfN-Philharmonie Hildesheim from Germany held a closed-door concert where estranged musicians spread out across the venue and were broadcast online via video. It was concluded that they were not possible measures to sustain for the performance of concerts.

CONCLUSION

Internet service both in Spain, in the United States and Mexico does not allow constant fluid communication. The improvement of the teaching practice in execution requires an evolution in this aspect that has been detected in past research but has not been successful, for which the support of video or audio recordings is required to complement the classes. Teacher training in new online technologies is needed to take advantage of their potential and avoid delays in quarantine periods, while regulating the entire online teaching-learning process. A gap in online education is revealed to cover the need for chamber, orchestral and choral music, so these subjects will have to be left on standby in contingency periods or channeled to the analysis of recordings and scores. Although online music performance education is an ally in isolated situations, it is not a substitute for face-to-face education. The aim of documenting the educational experience during a first stage of Covid 19 from the perspective of experts in string instruments was achieved, although it paves the way for future studies that will provide knowledge in overcoming the shortcomings of virtual education.

REFERENCES

- Aksoy, Y. y Ya 1 an, N. 2015. *El efecto de la enseñanza asistida por video en la interpretación del violín en la educación del violín de Özengen* tesis de maestría, Universidad Necmettin Erbakan.
- Albert, D. J. 2015. Online Versus Traditional Master of Music in Music Education Degree Programs: Students' Reasons for Choosing. En *Journal of Music Teacher Education*, Vol. 25. Núm 1. pp 52–64. <http://doi.org.conricyt.remotexs.co/10.1177/1057083714548588>
- Anderson, A y Barton-Wales, S. 2019. Musical culture and the primary school: an Investigation into parental attitudes to Whole Class Ensemble Teaching in the English primary school and potential impacts on children's musical progress. *British Journal of Music Education*. Vol. 36. pp. 267–279. <https://doi.org/10.1017/S0265051719000366>
- Arroyo, J. 2020, 23 de Marzo. Cronología del coronavirus en España desde su aparición. En *Redacción Médica*. Recuperado de <https://www.redaccionmedica.com/secciones/sanidad-hoy/coronavirus-infectados-espana-y-evolucion-covid19-desde-origen-4148>
- Baker, M y Fink, S. 2020, 23 de Abril. El asombroso recorrido del Coronavirus en Estados Unidos. En *El New York Times*. Recuperado de <https://www.nytimes.com/es/2020/04/23/espanol/mundo/coronavirus-primer-caso.html>
- Brändström, S., Wiklund y Lundström E. 2012. Developing distance music education in Arctic Scandinavia: electric guitar teaching and master classes. En *Music Education Research*. Vol. 14. Núm. 4. pp. 448-456. DOI: 10.1080/14613808.2012.703173
- Castillo, T. 2020. Cuando el reto de la educación a distancia forzada supone reinventarse: el ejemplo de la Escuela Superior de Música Reina Sofía. En *Genbeta*. Recuperado de <https://www.genbeta.com/a-fondo/cuando-reto-educacion-a-distancia-forzada-supone-reinventarse-ejemplo-escuela-superior-musica-reina-sofia>
- Cayari, C. 2018. Connecting music education and virtual performance practices from YouTube, *Music Education Research*. Vol. 20. Núm 3. pp. 360-376. DOI: 10.1080/14613808.2017.1383374
- Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., ... & Lam, S. 2020. COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning & Teaching*, 31, 1-20.
- Dammers, R. J. 2009. Utilizing Internet-Based Videoconferencing for Instrumental Music Lessons. Update: Applications of Research in Music Education. Vol. 28. Núm. 1. pp.17–24. <http://doi.org.conricyt.remotexs.co/10.1177/8755123309344159>
- Day, J. 2018. Apps para músicos. España. Redbook Ediciones, s.
- Dorfman, J. 2016. Music Teachers' Experiences in One-to-One Computing Environments. En *Journal of Research in Music Education*. Vol. 64. Núm. 2. pp. 159–178. <http://doi.org.conricyt.remotexs.co/10.1177/0022429416649947>
- Fernández, M; Herrera, L; Hernández, D; Nolasco, R; de la Rosa, R.2020. Lecciones del Covid-19 para el sistema educativo mexicano. En *Nexos*. Recuperado de <https://educacion.nexos.com.mx/?p=2228>
- Gobierno de México. 2020. Página principal sobre el COVID-19. Recomendaciones para la población. México. Recuperado de <https://coronavirus.gob.mx/>

- Gobierno Federal. 2010. Programa Escuela y Salud. Secretaria de Educación Pública. México. Recuperado de <http://www.seslp.gob.mx/transparencia/LinInfluenza.pdf>
- Güzel, B.B., Çakır, H., & Çelen, Y. 2020. Youtube üzerinden video destekli keman ö retimine ili kin ö renci görü ler. *Bilim, E itim, Sanat ve Teknoloji Dergisi BEST Dergi*, 41, 31-43.
- Hernández-Sampieri, R., Fernández-Collado, C., y Baptista-Lucio, M del P. 2010. Metodología de la investigación. Perú: The MacGraw – Hill
- Kesendere, Y., enol-Sakin, A., & Acar, A.K. 2020. Educators' views on online/distance violin education at Covid-19 outbreak. *Journal for the Interdisciplinary Art and Education*, 11, 1-19.
- Koutsoupidou, T. 2014. Online distance learning and music training: benefits, drawbacks and challenges. *EnOpen Learning: The Journal of Open, Distance and e-Learning*. Vol. 29. Núm. 3. pp. 243-255. DOI: 10.1080/02680513.2015.1011112
- Lago Castro, P., & Ponce de León Barranco, L. 2012. Creatividad y tecnología en la orientación de nuestros futuros músicos. *REICE. Revista Electrónica Iberoamericana sobre Calidad, Eficacia y Cambio en Educación*.
- López, I., & Lago, P. 2013. El aprendizaje online de un instrumento musical. *Revista didáctica, innovación y multimedia*, 27, 1-15.
- Martín, R. P., Recalde, J. M., & Carnicero, M. J. U. 2020. ¿Cómo han gestionado los conservatorios de música españoles los procesos de enseñanza-aprendizaje durante el confinamiento del COVID-19?. *Revista electrónica de LEEME*, 46, 108-124.
- McMillan, JH., Schumacher, S. 2005. Investigación educativa. España: Pearson Educación.
- Monterrubio, M. H., & León, R. T. 2021. Movilidad y dificultades del trabajo a distancia en tiempos de Covid-19: una visión de los alumnos de la Licenciatura en Música del Instituto de Artes de la Universidad Autónoma del Estado de Hidalgo. *MAGOTZI Boletín Científico de Artes del IA*, 917, 9-16.
- Moser, J. 2021. Masterclass with Johannes Moser. Harvard-Radcliffe Orchestra <https://www.youtube.com/watch?v=NtaNEGStgMs>
- Navarro, J. L., Lavigne, G., y Salgado, G. G. M. 2009. Curso de guitarra clásica en línea: blogs para la enseñanza musical. *Revista Electrónica de LEEME*. Vol 24. pp. 23-48. Recuperado de <https://ojs.uv.es/index.php/LEEME/article/view/9794>
- Piñon, A. 2020, 19 de Mayo. Sana distancia, el reto que le espera a la música en vivo. *El Universal*. Recuperado de <https://www.eluniversal.com.mx/cultura/sana-distancia-el-reto-que-le-espera-la-musica-en-vivo>
- Riley, P. 2013. Teaching, Learning, and Living with iPads. *En Music Educators Journal*. Vol. 100. Núm. 1. pp. 81–86. <http://doi.org.conricyt.remotexs.co/10.1177/0027432113489152>
- Sever, G. 2014. Aplicación del modelo de aprendizaje traducido en lecciones individuales de violín. *Revista de investigación cualitativa en educación*, 2 2, 27-41.
- Vengerov, M. 2021. Violin Masterclass with Maxim Vengerov. <https://maximvengerov.com/online-classes>
- Ma, Yo-Yo. 2020. Saint-Saens-The Swan <https://www.youtube.com/watch?v=wiPHeUqCbtw>
- Zhang, W., Wang, Y., Yang, L. y Wang, C. 2020. Suspending Classes Without Stopping Learning: China's Education Emergency Management Policy in the COVID-19 Outbreak. *Journal of Risk and Financial Management*, 13, 55. doi:10.3390/jrfm13030055
