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Adapting to Change: Investigating the Influence of Distance Learning on Performance in Italian Conservatories

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Abstract: During the COVID-19 pandemic, the sudden switch from face-to-face learning to distance learning generated many critical issues in music institutes. Specifically, conservatories found themselves using a didactic methodology that had never been considered before to ensure the continuation of students’ education. In particular, the adoption of distance learning has had a greater impact on those classes characterized by a significant practical–experiential component. This study aims to investigate the phenomenon of distance learning in Italian conservatories to explore how this experience affects students’ performance through their satisfaction with distance learning. A cross-sectional study was conducted on 328 students of 41 Italian conservatories, using an online self-report questionnaire to investigate conservatory students’ experience of distance learning and its impact on performance. To test the hypotheses, a mediation model was tested using SPSS version 26. The results show that the positive experience of distance learning has a positive impact on perceived performance and that satisfaction with distance learning, as a mediator role, further reinforces this relationship. This study is the first known one to explore the relationship between the experience of distance learning and student performance in the context of conservatories and music teaching.

Keywords: distance music learning; learning satisfaction; academic performance; post-pandemic world; digital transformation



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1. Introduction

In the Italian conservatories, significant changes were introduced to the music education in accordance with Law 508 of 1999. The educational framework now comprises three progressive courses: propaedeutic, pre-academic, and academic, spanning three years followed by an additional two years. The programs offered included classical, pop, and jazz.

In terms of curricula, aside from instrumental and vocal studies, students can choose from a diverse range of subjects, such as music education, music therapy, choir and orchestra conducting, composition, chamber music, and applied music. Notably, lessons, whether practical or theoretical, individual or group, have traditionally been held in person.

In the early months of 2020, due to the COVID-19 pandemic, the landscape of education underwent a transformative shift, with the sudden introduction of distance learning (Roncaglia 2020). This sudden change necessitated a substantial effort on the part of institutions and teachers, who found themselves compelled to rethink and redesign their lessons in order to ensure the uninterrupted education of students (Lucisano 2020). For conservatories, the challenge was particularly formidable, as the concept of distance learning had never been contemplated as a viable teaching modality in these institutions, primarily due to the intricacies of teaching musical instruments. Despite these inherent difficulties, conservatories and teachers exerted considerable effort to navigate the uncharted territory of distance learning. They worked to identify and implement the most effective tools for distance learning. Among the widely adopted platforms were Google Suite, Meet, Classroom,

Skype, and Zoom. Additionally, students devised alternative methods, such as recording themselves playing or singing and then sending these recordings to their teachers.

Furthermore, music students are expected to receive a very practical and experiential type of education, aimed at nurturing the three pillars of music teaching, which are performing, listening, and creating (Campbell et al. 2016). Before 2020, the point of contact between music and digital technologies was limited to the use of digital devices such as video and audio players, for simulations or for the more conventional activity of surfing the net (Gorgoretti 2019). Because of the pandemic advent and the turning to distance learning, music teachers had to reinvent their way of teaching and they had to get used to the implementation of digital technologies in their daily practices. An important aspect must be stressed: it was a global emergency situation, so teachers—as other professional categories—were forced to restructure their jobs, without any kind of skills building or previous training (Calderón-Garrido and Gustems-Carnicer 2021). This abrupt implementation, without adequate training, led to feelings of anxiety, fatigue, and a sense of inefficacy, which are all associated with technostress (Sulla et al. 2022b). Students also experienced similar negative emotions and attitudes, and certain protective factors, such as grit and self-efficacy, were identified. Grit was found to have a positive impact on final performance (Sulla et al. 2022a).

The purpose of this study is to investigate the relationship between distance learning experience and student performance in an educational context that has not yet been explored. We also investigate the mediating role of satisfaction in this relationship. The relationship between distance learning experience, satisfaction, and student outcomes has been investigated in the literature, but there are no previous studies on conservatory students. Therefore, our study is among the first to investigate this relationship in music online education.

The literature confirms that there is a strong relationship between students' satisfaction and their experience of online teaching (Ikhsan et al. 2019) and also between satisfaction and performance (Younas et al. 2022; My et al. 2022). What is lacking in the literature is a demonstration of these relationships in music students.

2. The Literature Review

2.1. Music and COVID-19

Since the onset of the COVID-19 pandemic in the early months of 2020, numerous studies have been conducted on remote teaching and learning. However, only a few have focused on the field of music education, particularly in music conservatories. Due to the unexpected and abrupt shift, music conservatories and their teachers found themselves having to adopt a new teaching method without the necessary skills and knowledge. In fact, many conservatories' teachers expressed difficulties in continuing their lessons precisely due to a lack of digital training and resources. Some even refused to conduct online classes (Calderón-Garrido et al. 2021; Schiavio et al. 2021). Teachers with technological proficiency who embraced distance teaching explored the potentialities offered by online education (He 2020). They utilized these opportunities to reinvent their teaching methods, enabling students to continue their studies.

Shaw and Mayo (2022) provided an overview of distance music education in the United States. They conducted a descriptive survey to explore teachers' perceptions of music instruction, student engagement, and the related policies governing distance learning. One interesting aspect highlighted the teachers' perceived low quality of the musical experience, suggesting that in-person instruction was deemed the best method for teaching music. Some students delved into investigating teachers' well-being, concerning new online habits and the pandemic's impact on teaching effectiveness. While a causal relationship could not be established, they found a decrease in both teaching efficiency and personal well-being during the initial period of the pandemic (Cheng and Lam 2021; Miksza et al. 2022). Regarding students' perceptions, Di Palma and Belfiore (2020) investigated the perceived effectiveness of distance learning by students. The study revealed a favorable

openness among students towards online education, although social relationships were significantly disadvantaged.

In the conservatories, only subjects closely tied to music theory, such as solfeggio, harmony, and music history, were less impacted during distance learning (Calderón-Garrido et al. 2021). This is attributed to the inherent challenges associated with distance teaching of an instrument or singing remotely, owing to various characteristics specific to these disciplines. This is difficult due to several characteristics related to the instruments and voice. For instance, ensemble classes were significantly affected by distance learning compared to subjects related to music theory, while subjects related to music theory were less impacted (Calderón-Garrido et al. 2021). In conservatories, ensembles can be composed of two or more musicians (duo, trio, quartet, quintet, sextet, wind or string orchestras, up to full orchestras). The greater the number of musicians, the more challenging or even impossible it becomes to have lessons or rehearsals online; physical attendance is necessary. The lack of interaction with peers and teachers was also a negative aspect of distance education (Hepşen 2022; Schiavio et al. 2021). Major challenges in conducting music lessons online included issues related to internet connectivity, particularly latency issues (Daubney and Fautley 2020; Yıldız et al. 2021), and the inability to control posture, gestures, and non-verbal communication (Hepşen 2022). Students' difficulty in synchronizing through facial expressions and breathing during ensemble performances made ensemble classes impossible. The lack of interaction with peers and teachers was also a negative aspect of distance education (Hepşen 2022; Schiavio et al. 2021). Some students reported practicing less during the lockdown compared to before (Nusseck and Spahn 2021) and experiencing decreased concentration during online lessons (Shim and Lee 2020). Ozer and Ustun (2020) stated that institutions most affected by distance education were fine arts academies and music conservatories, as issues related to online teaching negatively impact the educational process in the artistic sector.

2.2. Satisfaction

The students' perspectives were extensively investigated, and a descriptive survey was conducted to assess satisfaction with distance learning (Hash 2021). According to this study, learners were generally satisfied with the innovative element brought by digital creative activities and the provision of music theory through technology. Students also appreciated the efforts made by institutions and teachers to ensure the continuity of lessons. Almusharraf and Khahro (2020) state that students were satisfied with how distance education was managed by staff, thanks to technical support and agreed-upon platforms for use, as well as by teachers, particularly for training workshops and the assessment system. For students, the support received from teachers, the consistent feedback on their performance, and the effectiveness of the lessons increased their satisfaction as their learning needs were met (Baloran and Hernan 2021). Regarding the future use of distance education, many students have viewed distance learning as a beneficial means and believe it can be used in the future as well (Faize and Nawaz 2020). Other students, on the other hand, believe that contact with the teacher is essential for learning, and therefore, they consider in-person teaching to be preferable (Hashim et al. 2020). Regarding music institutions, students are satisfied with distance education as they feel more secure regarding the risk of COVID-19 infection (Rosset et al. 2021). Not having to travel to the conservatory allows them to invest the time spent on commuting in their studies (Hernández 2020). Therefore, distance learning, while being a useful means to continue lessons during the COVID-19 pandemic, cannot completely replace in-person teaching (Nsairat et al. 2022). The study of music, especially in conservatories, cannot be conducted online because students' training would be compromised. Students need to be present for various aspects closely related to instrument and vocal training, especially for courses that involve ensemble performances. Theoretical subjects, on the other hand, could certainly be conducted online, and this would even be an advantage for students, allowing them to invest the time they would spend traveling in their studies (Hamdan et al. 2021).

2.3. Performances

The effects of distance education on student performance have been investigated in conventional institutions but have been relatively unexplored for music students. In a study conducted on medical students at a university in Japan, researchers found that despite students facing some challenges in adapting to distance learning, their performance in proficiency tests had improved (Sekine et al. 2022). Some students perceived performance improvement due to the creative and collaborative aspects that characterized online lessons (AlMahdawi et al. 2021). In fact, even in music conservatories, many teachers had to reinvent their methods and utilize their creativity to make online lessons more engaging. Overall, for university students, it has been observed that distance learning has had a very positive impact on academic performance, leading to better student outcomes and results (Mandasari 2020; Khusniyah and Hakim 2019; Cavanaugh et al. 2023; Fuad and Andhinasari 2021). Confirmation of the positive effects of online education on student performance also comes from several longitudinal studies. Manna et al. (2021) used a probabilistic model to measure the performance of a group of students before and after the pandemic; the results show how online education has improved student performance, especially in language learning, through social inclusion and integration. A study conducted by Gonzalez et al. (2020) on Spanish students demonstrates the significant and positive effect of online education on student performance. Researchers also conducted an analysis of students' learning strategies, both before and after the period of isolation, and observed how students changed their learning strategies by studying more consistently. This improvement enhanced their efficiency and performance. Confirmation of the crucial role of distance education in enhancing academic outcomes for Spanish students also comes from a subsequent study by Iglesias-Pradas et al. (2021), demonstrating students' improved results following distance education. Another study (Chisadza et al. 2021), conducted on students from an African university, investigated student performance before and after the lockdown. The results showed that students' performances improved when they had good internet access but worsened when students found the transition to online learning challenging.

Other researchers questioned whether there were improvements in performance even in the context of sports. Ritonga et al. (2020) conducted a study on students from the Faculty of Sports Sciences at Medan State University, and their results confirmed that distance learning leads to higher scores compared to in-person learning.

An interesting finding emerged from Clark et al. (2020). The researchers observed that students' performances improved based on the preparedness of teachers, and overall, better students did not necessarily achieve better results with online education.

In the field of music learning, there are conflicting opinions because many students claim to have dedicated more time to practice during the isolation period, leading to better performances. However, others reported a decrease in practice hours due to increased stress perception (Rosset et al. 2021).

Given the limited presence in the literature of studies concerning musicians' performances, our study aims to fill this gap and seeks to confirm the influence of students' distance learning experiences on their performances, considering the mediating role of satisfaction in this relationship.

2.4. Aim of the Study and Hypotheses

According to the most recent literature (Molino et al. 2020; Wang et al. 2021; Toscano et al. 2022; Galanti et al. 2023), the COVID-19 pandemic substantially forced educational institutions, universities, and conservatories to adopt distance learning to ensure the continuation of students' education. More than any other sector, the world of education and training had to grapple with this new way of operating to contain the virus spread among students while simultaneously ensuring education and training. Several studies have highlighted both positive and negative consequences of remote teaching, but its implications in the context of conservatory learning have not been explored yet. Based

on this premise, this study aimed to investigate the phenomenon of distance learning in Italian music conservatories during the COVID-19 epidemic, in order to explore how the experience of distance learning has influenced performance. Therefore, the following hypotheses are formulated to test (1) the existing relationship between students' distance learning experience and their performance and (2-3-4) the role of satisfaction with distance learning in this relationship.

Hypothesis (H1). *A positive experience with remote learning positively impacts self-perceived performance.*

If students have a positive experience with remote learning, it will have a positive effect on how they perceive their own performance. In other words, a favorable encounter with distance education is expected to correlate with higher self-perceived academic achievement. If this hypothesis is supported, it suggests that students who have positive experiences with remote learning are likely to have higher confidence in their academic abilities. This positive perception could lead to increased motivation, engagement, and potentially better learning outcomes.

Hypothesis (H2). *A positive experience with distance learning positively influences satisfaction.*

A positive experience in remote learning contributes to an increase in overall satisfaction. If students have a favorable and successful experience with distance learning, it is expected to enhance their overall satisfaction with the learning process. Confirming this hypothesis would indicate that the quality of the learning experience directly contributes to overall satisfaction. Institutions and educators should focus on enhancing the aspects of distance learning that contribute to a positive experience, as it may, in turn, foster greater satisfaction among students.

Hypothesis (H3). *Satisfaction positively influences performance.*

This hypothesis suggests that the level of satisfaction a student experiences with distance learning is expected to have a positive impact on their actual academic performance. In other words, higher satisfaction is hypothesized to be associated with better performance. If satisfaction indeed positively influences performance, it implies that student contentment with the learning process plays a crucial role in academic success. This finding would underscore the importance of not only delivering educational content effectively but also ensuring that students are satisfied with the overall learning experience.

Hypothesis (H4). *Satisfaction with distance learning mediates the relationship between the experience of remote education and performance.*

This hypothesis introduces the concept of mediation: the positive effect of a good experience with distance learning on performance is expected to be partially explained by the level of satisfaction with the learning process. So, satisfaction seems to act as a mediator in this relationship, suggesting that the impact of a positive learning experience on performance is, at least in part, dependent on the level of satisfaction. This underscores the need for educators and institutions to prioritize factors that contribute to student satisfaction during distance learning.

3. Materials and Methods

3.1. Sampling Method

A cross-sectional study was conducted to explore the distance learning experience of Italian conservatory students during the COVID-19 pandemic. The sampling frame included students from 41 Italian conservatories engaged in remote learning at the time of data collection (from December 2020 to February 2021). The sample size comprised

328 students, representing a diverse range of disciplines and age groups. To ensure a representative sample, participation in the study was voluntary. The highest response rates were observed in specific conservatories, notably Piacenza (14.6%), Ferrara (11.2%), and Salerno (10.6%). This distribution aimed to capture variations in experiences across different regions and institutions.

3.2. Data collection Process

Data were collected through a self-report-administered online questionnaire hosted on Google Forms platform. The questionnaire (see Appendix A for the entire version), designed to capture the nuanced aspects of the distance learning experience, covered various dimensions such as access to resources, engaging in virtual classes, and the overall impact on academic and artistic pursuits. During the period of data collection, all participants were actively enrolled in remote learning at Italian conservatories. The online nature of the survey facilitated widespread participation while adhering to safety measures imposed by the ongoing pandemic. Informed consent, in accordance with the Helsinki Declaration, was obtained from all respondents. The study strictly followed ethical guidelines for social research, ensuring participant anonymity, voluntariness, and lack of compensation for their involvement.

3.3. Sample Characteristics

The study cohort comprised 191 females (58.1%) and 137 males (41.6%), reflecting the gender distribution within Italian conservatories. Age distribution varied, with 61.1% of participants aged between 18 and 25 years, 25.5% between 26 and 35 years, 8.5% between 36 and 45 years old, and the remaining 5.2% aged over 45 years. The disciplines pursued by students were diverse, with 16.1% in theoretical disciplines (composition, music didactics, and music therapy) and the majority (83.9%) in practical disciplines (instruments or singing). Moreover, 75.1% of students focused on classical music, 17.6% on jazz music, and 7.3% on pop music. Table 1 presents the essential characteristics of the sample, providing a comprehensive overview of the demographic and academic diversity represented in the study.

Table 1. Socio-demographic characteristics of the sample.

Variables	Categories	Numbers	Percentage
1. Gender	M	137	42%
	F	191	58%
	Other	0	0%
	Total	328	100%
2. Conservatory	North	17	41%
	Center	10	24%
	South	14	34%
	Total	41	100%
4. Course	Propaedeutic		
	Pre-academic		
	Academic		
	Total	3	100%
5. Subject	Theoretical		16.1%
	Theoretical-practical		2.10%
	Stringed instruments		10%
	Wind instruments—woodwind		14.3%
	Wind instruments—brass		9.7%
	Plucked string instruments		11.6%
	Percussion string instruments		11.2%
	Percussion instruments		4%
	Aerophonic instruments		1.5%
	Sing		17.3%
	Total	10	100%
6. Program	Classic	246	75%
	Jazz	59	18%
	Pop	23	7%
	Total	328	100%

3.4. Measures

The experience of distance education was measured using the [Di Palma and Belfiore \(2020\)](#) questionnaire on distance learning, consisting of 10 items that investigate students' experience of online learning education. The scale aims to assess the effectiveness in terms of the education perceived by the student regarding the experimental service offered by Italian conservatories during the period of COVID-19. The scale provides a 4-point Likert scale response mode ranging from "completely disagree" to "totally agree" (Cronbach's Alpha is 0.72). Items pertain to various aspects, ranging from the availability and devices typology to attitudinal motivational dimensions. Satisfaction with distance education and self-perceived performance were measured using two ad hoc items with a 7-point Likert scale response ranging from "not at all" to "very much".

4. Results

4.1. Descriptive Statistics

We calculated descriptive statistics and bivariate correlations for each study scale. Additionally, we evaluated the normality of the data by examining the skewness and kurtosis values for each scale. The results showed that the skewness and kurtosis values for all variables were within the acceptable range of ± 2 , indicating that the distribution of characteristics across the variables was within the parameters of normality. All the associations among the constructs under examination were significant in the expected direction, and all the scales met the criterion of a 0.65 Cronbach's Alpha ([DeVellis 2016](#)). Table 2 presents the results of these analyses.

Table 2. Means, standard deviations, and correlations between the study variables.

Variable	Mean	SD	2	3
1. Online learning experience (OLE)	3.45	1.84	0.42 **	0.37 **
2. Satisfaction with remote education	3.89	1.76		0.58 **
3. Performance	2.81	0.378		

Note: ** $p < 0.01$.

4.2. Model Testing

After the mentioned analyses, we computed the model test (Model 4, Macro PROCESS, [Hayes 2013](#)) to evaluate if the results supported our hypothesized model.

The model results, depicted in Figure 1, show that online learning experience (OLE) was positively related to performance ($\beta = 0.77, p = 0.01, 95\% \text{ CI } [0.25, 1.31] = \text{H1 supported}$) and also positively related to satisfaction with online learning experience ($\beta = 1.95, p = 0.01, 95\% \text{ CI } [1.48, 2.46] = \text{H2 supported}$). Satisfaction with online learning experience was positively related to performance ($\beta = 0.54, p = 0.01, 95\% \text{ CI } [0.43, 0.65] = \text{H3 supported}$). Finally, the supposed mediation of satisfaction in the relationship between OLE and performance (H4) was supported ($\beta = 1.71, p = 0.01, 95\% \text{ CI } [0.73, 1.49]$).

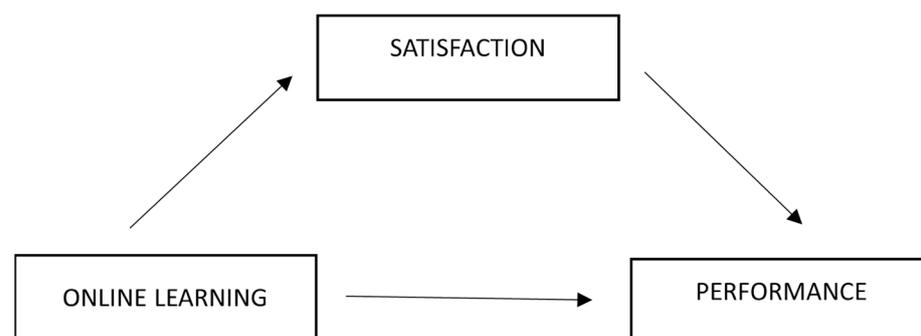


Figure 1. Conceptual model.

Tables 3 and 4 present the estimates of all path coefficients and bootstrapped bias-corrected 95% confidence intervals (95% CIs) regarding the indirect relationship included in the hypothesized model.

Table 3. Mediation estimates.

Effect	Label	Estimate	SE	95% Confidence Interval		Z	p	% Mediation
				Lower	Upper			
Indirect	a × b	1.071	0.180	0.751	1.45	5.95	<0.001	58.1
Direct	c	0.771	0.276	0.267	1.36	2.79	0.005	41.9
Total	c + a × b	1.841	0.269	1.316	2.38	6.85	<0.001	100.0

Table 4. Path estimates.

			Label	Estimate	SE	95% Confidence Interval		Z	p
						Lower	Upper		
OLE	→	SOD	a	1.958	0.2487	1.456	2.468	7.87	<0.001
SOD	→	PERF1	b	0.547	0.0551	0.432	0.643	9.92	<0.001
OLE	→	PERF1	c	0.771	0.2761	0.267	1.360	2.79	0.005

5. Discussion

The present study aimed to investigate the phenomenon of online education in Italian conservatories to explore how the experience of distance learning impacts students' performances through their satisfaction with online education.

The study found that there is a positive relationship between the level of experience in online learning experience (OLE) and students' academic performances. In simpler terms, students who actively participate in distance learning tend to achieve better academic results. This aligns with the first hypothesis (H1), suggesting a positive connection between OLE and performance. This positive relationship between OLE and academic performance is consistent with the existing literature on the subject (Ahshan 2021; Khlaif et al. 2021). Recent research has often shown that students who engage more actively in remote or online learning environments tend to achieve better results in their studies (Lin et al. 2023; Tulaskar and Turunen 2022). These findings underscore the importance of active participation and engagement in distance learning, which can have a positive impact on students' educational outcomes.

The research also revealed that as students' involvement in their online learning experience (OLE) increases, their satisfaction with remote work education also rises. Essentially, students who are more engaged in distance learning tend to have a more positive view of their online educational experience. This supports the second hypothesis (H2) that proposed a positive association between OLE and satisfaction with remote work education.

This observed relationship between OLE and satisfaction with remote work education is consistent with the existing literature (Salayo et al. 2021; Kovačević et al. 2021). Several studies in the field have previously highlighted that increased student engagement in distance or online learning is often associated with higher levels of satisfaction with the learning experience (Basuony et al. 2021; Chen et al. 2020). These findings underscore the importance of active participation in enhancing students' overall satisfaction with remote education, as corroborated by prior research.

Thirdly, the study found that higher levels of satisfaction with remote work education are linked to better academic performance. In other words, students who are more satisfied with their distance learning experience tend to perform better academically. This finding supports the third hypothesis (H3), which posited a positive relationship between satisfaction with remote work education and performance. This finding aligns closely with the

existing body of literature on the topic. Numerous studies in the field have consistently shown that students who express higher levels of satisfaction with their online or remote learning experiences tend to perform better academically, also during the pandemic period (Butt et al. 2023; Rasheed et al. 2022). Indeed, while the positive relationship between student satisfaction and academic performance has been well-documented in various educational contexts, it is important to note that this study contributes a unique perspective by examining this relationship within the specific context of conservatory education. The findings provide valuable insights into how this relationship operates in the unique setting of music conservatories, where the nature of instruction and the demands on students may differ from more traditional academic environments. This contextual nuance adds depth to our understanding of the interplay between student satisfaction and performance, particularly within the specialized field of music education.

Finally, this study also investigated whether satisfaction with remote work education mediates the relationship between OLE and performance (H4). The results suggest that part of the positive impact of OLE on performance can be explained by students' satisfaction with remote work education. In simpler terms, OLE not only directly affects performance but also indirectly through its influence on students' satisfaction. This mediation effect highlights the complexity of the relationship between OLE and performance, demonstrating that it operates through multiple pathways (Nashaat et al. 2021). This insight underscores the importance of not only fostering active engagement in distance learning but also ensuring that students are satisfied with their remote educational experiences, as both factors play a role in determining their academic success (Froment and Gutiérrez 2022; Tan et al. 2022).

These findings emphasize that students who actively engage in online learning experiences (OLEs) tend to perform better academically and have a higher level of satisfaction with their online education experience. Moreover, the study highlights the role of satisfaction with remote work education in mediating the relationship between OLE and academic performance, underscoring the importance of students' overall satisfaction in understanding how their distance learning experiences relate to their educational outcomes.

6. Limits, Implications, and Future Studies

6.1. Limits

This study is not without limitations. One significant limitation of this study is its cross-sectional design. While it allowed for the examination of associations between variables, it did not provide the ability to establish causality. Future research could benefit from longitudinal designs that track changes in student experiences, satisfaction, and performance over an extended period to better understand the causal relationships at play.

Another limitation is not including teachers' opinions on students' performance and satisfaction and considering only the self-reported performance by students. Self-reported data may be subjective and influenced by personal biases, according to which students might perceive their performance differently than teachers. So, future research could take both teachers' and students' opinions into account, combining self-reported data with teacher input, for a more balanced and comprehensive understanding of a student's academic performance and satisfaction to understand the relationship between these. In fact, teachers should have a more comprehensive view of a student's academic performance and they should be also trained to provide objective evaluations.

Similarly, future studies should go beyond the student/teacher dichotomy and try to integrate different perspectives to also evaluate the role of these two actors in mutual satisfaction and performance with respect to remote education. In addition, it might also be interesting to assess whether constructs such as technology acceptance can influence interactions to continue using/participating in online lessons and what the influencing factors are (Gabbadini et al. 2023; Rahim et al. 2022).

Another limitation is the use of a convenience sample. This sample selection method might introduce bias into the results, as participants who choose to take part in the study

may not be representative of the entire population of conservatory students. Consequently, caution should be exercised when generalizing the findings to broader populations. In this regard, future studies should extend this research to other educational settings characterized by practical and experiential lessons to broaden the sample size.

6.2. Practical Implications

The findings of the study have practical implications for teachers and institutions involved in online music education. Firstly, the research underscores the importance of actively engaging students in distance learning. It suggests that fostering such engagement can result in improved academic performance. Therefore, music teachers and institutions should consider strategies to promote student participation and interaction within virtual learning environments.

Furthermore, the study highlights the significance of student satisfaction with remote education. It reveals that a positive online learning experience is associated with increased satisfaction. This connection between engagement and satisfaction implies that institutions can enhance online learning by providing user-friendly platforms, fostering a sense of community among students, and offering essential support services. By doing so, they can contribute to elevated levels of overall student satisfaction.

Additionally, the identification of student satisfaction as a mediator between online learning experience and performance suggests that institutions can implement tailored support mechanisms. They can identify factors contributing to satisfaction and, in turn, support students facing challenges in the distance learning environment. This targeted assistance can be instrumental in improving student academic outcomes.

However, it is important to note that this study did not compare remote learning with pre-pandemic in-person learning. Recent studies ([Rapanta et al. 2020](#); [Hickland et al. 2020](#)) suggested that teachers and students are glad to return to in-person learning. Moreover, non-verbal communication is lacking in online education ([Bhatti and Teevno 2021](#)), as well as the nuanced interpersonal interactions that are integral to the traditional classroom setting. While virtual platforms offer valuable tools for conveying information, the absence of physical presence poses challenges in transmitting non-verbal cues such as facial expressions, body language, and spontaneous interactions. All these aspects contribute significantly to the richness of the learning experience and are often vital in music education, where subtle nuances and real-time feedback play a crucial role. Therefore, while remote learning may serve as a viable alternative for theoretical lessons if managed correctly, its role in fully substituting traditional, in-person instruction for practical subjects remains a complex challenge. Striking a balance between the advantages of virtual education and the irreplaceable benefits of physical presence is crucial for providing a comprehensive and impactful music education experience ([Hrabluk 2023](#)).

The findings of the study also hold theoretical implications that enrich our understanding of distance learning in specialized fields like music education. Firstly, it contributes to the theoretical discourse by demonstrating the adaptability of findings from the broader educational literature to these unique contexts. This adaptability underscores the importance of considering the specific nuances and requirements of specialized fields when analyzing distance education.

Additionally, the research provides insights into the role of satisfaction as a mediator within the complex relationship between OLE and academic performance. This theoretical contribution enhances our understanding of the mechanisms at play in the distance learning process, highlighting the importance of not only the direct impact of engagement but also the indirect influence through satisfaction.

Furthermore, the study underscores the multifaceted nature of distance learning. This complexity emphasizes the need for a comprehensive approach to studying distance education, one that considers both direct and indirect influences on student performance and satisfaction. It reminds researchers to explore the intricate interplay of factors in the remote learning environment.

Moreover, the study suggests future research directions, encouraging scholars to engage in longitudinal studies, conduct comparative analyses, and delve into qualitative investigations. These research endeavors can further enrich our comprehension of distance learning in specialized fields and identify effective pedagogical practices for online education.

Lastly, the insights gained from this study may inspire researchers to explore whether analogous patterns exist in other specialized educational contexts. This exploration could extend the applicability of the study's conclusions, broadening our understanding of distance education's impact across diverse domains.

6.3. Future Directions

Future directions for this study hold promise for enriching our understanding of distance education in specialized fields like music and the arts. One essential avenue for exploration involves broadening the scope to encompass a diverse range of educational settings beyond conservatories. By including art schools, music schools, and institutions offering practical and experiential lessons, researchers can establish a more comprehensive understanding of the intricate relationships between distance learning, student satisfaction, and academic performance across varied contexts.

Moreover, embracing longitudinal studies is imperative. This approach enables researchers to gain deeper insights into how conservatories and art schools adapt and promote distance education over time. Longitudinal research, which tracks changes in teaching methodologies, technology integration, and student outcomes, can unveil evolving trends and best practices in remote education, ultimately providing a more nuanced perspective on how these changes impact student performance in the long term.

Complementing quantitative findings with qualitative research methodologies, such as interviews and focus groups, represents another promising direction. Qualitative research has the potential to uncover the nuanced aspects of distance education that influence student satisfaction and performance, offering invaluable insights to inform the development of more effective strategies for distance learning. Additionally, intervention studies could be conducted to assess the effectiveness of specific strategies or interventions aimed at improving the distance learning experience in conservatories and art schools. Lastly, a comparative analysis between traditional in-person instruction and distance learning within these specialized institutions could yield valuable insights into the advantages and limitations of each instructional mode, aiding decisions related to curriculum design, teaching methodologies, and resource allocation. In summary, by addressing these future directions, researchers can not only build upon the current study's valuable insights but also contribute to the ongoing advancement of distance education practices in specialized fields, ultimately enhancing the quality of teaching and learning experiences for students.

7. Conclusions

Our study is the first to consider and confirm that students' perception of music distance learning and their satisfaction with distance education can positively affect the students' performance. The surprising and practically significant finding is that this relationship holds true even for learning music, which is typically practical and experiential in nature. The scientific literature widely confirms an existing relationship between satisfaction and performance in general, specifically between satisfaction with distance learning and performance. The innovative aspect of this study lies in its particular focus on the field of music. Therefore, potential implications emerge, firstly, from a research perspective, this study lays the groundwork for future investigations regarding the dispositional and contextual conditions that can promote optimal distance education in conservatories. Secondly, from a practical standpoint, there might be a need to redesign music teachers' training to make them more aware of the advantages of digital technology in music education.

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Appendix A

Age 18–25 26–35 36–45 >45
 Gender M F
 Conservatory _____
 Subject _____
 Program: Classic Pop Jazz

Please answer the questions thinking about the lockdown period and express the degree to which the statement represents the situation you experienced, on a scale ranging from: 1 = No 2 = More no than yes 3 = More yes than no 4 = Yes

Do you have the necessary technological means to attend online classes (Wi-Fi, computer, ...)?

Are you continuing to attend classes for all the subjects in your study program?

Do you think the workload is greater compared to traditional teaching methods?

Have the teachers effectively adapted their lessons to this new form of teaching?

Is your attention during online classes consistent?

Do you perceive significant shortcomings compared to traditional teaching?

Do you feel that the physical distance from your classmates negatively affects the new school life?

Do you feel motivated in your studies?

Do you think that continuing online classes even after the emergency is over could be helpful for you or other students?

Please answer the following questions about online teaching on a scale ranging from: 1 = not at all 2 = very little 3 = little 4 = neither little nor much 5 = moderately 6 = much 7 = very much

Do you perceive yourself to have improved on your instrument through distance learning?

How satisfied are you overall with distance learning?

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