Blending Synchronous and Asynchronous Based on Visualization Strategy in Music Lesson to Promote Music Students' Performance Skill

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ABSTRACT

During the COVID-19 pandemic, music lessons greatly impact teachers and students, especially the constraints of applying proper tools in online music lessons including delivering lessons, classroom interactions, and conducting assessments to ensure students' learning goals attain a desired end. This research study aimed to examine the effect of blending synchronous and asynchronous music lessons based on visualization strategy towards students' music performance skill. This research applies a quasi-experimental design where obtaining validation from teachers and experts on the learning activities through blended learning based on visualization strategy, Wilcoxon Signed Rank Test and Spearman Correlation for measuring the effectiveness of learning activities for music lesson based on blended learning approach towards student's musical performance skill and achievement, and a quantitative design supported with quantitative data where descriptive statistics are used to examine the perception of student's on learning activities based on blended learning using synchronous and asynchronous towards their performance skill. This study was conducted based on an experiment whereby students participated during their music lesson via synchronous and asynchronous with the support of visual media. Digital platform with learning activities was used to conduct the synchronous and asynchronous lessons, and student's performance skill were measured in relation to learning effectiveness. Six weeks of planning evaluation variables were tested involved rubric scores according to students' pre-activity and post-activity in addition to test the interrelationship of students' achievement grading system during pre-test and post-test conducted. A questionnaire with items of 30 student's perception on the learning activities based on blended learning using synchronous and asynchronous with visualization strategy towards music performance skill were brought forward after the completion of 5 weeks program. Using visualization strategy positively impacts students' understanding and enhances their skill in music performance and music theory achievement. Nevertheless, there was no correlation between students' music performance skill and music theory achievement in promoting students' music performance skill. Based on the students' perception, they were able to improve in music performance skill substantially developed from viewing visualized materials, understanding the concept of music performance skill, and implementing on their musical instruments. Teachers' perceptions should be considered to provide expectations towards students' motivation and accomplishment.

Keywords—Synchronous, Asynchronous, Technological tools, Online music lesson, Visualization strategy, Music performance skill, Music theory, Online quiz tools

Introduction

Music lessons have always been practiced as face-to-face lessons. However, due to the COVID-19 pandemic, music lessons must shift to remote learning. Teachers face challenges in using digital tools in conducting music lessons, meanwhile, parents were confused about the procedure for helping their children to attend remote learning (King & Jones, 2019). During the announcement of the lockdown, music teachers ought to find an alternative solution to keep their music lessons ongoing, therefore, teachers were finding a suitable digital platform that is convenient for both the teachers and students to utilize (Goudeau *et al.*,2021). Some of the students who prefer physical lessons often get bored with online lessons. Hence, students were not showing their attentiveness in music lessons during the remote learning, teachers were trying to plan activities to get the students engaged in the music lessons (Aziz *et al.*, 2021). Online activities such as music game activities able to help create an interactive learning environment throughout remote learning. In addition to accommodate distance learning process, social application was used for communication purposes between teachers and students (Dhawan, 2020). Technical issue often occurs during synchronous lesson probably due to the latency of audio and internet connection (Akarsu, 2021; Koutsoupidou, 2013), therefore, music teachers exert proper settings of audio in digital tool and make certain of the internet connection that would be possible to delivery an effective online music lesson. Besides, students face problems

imagining their performance in music lessons, in which students were unable to capture the entire understanding through synchronous or asynchronous learning. Hence, visualization acts as a support to enhance students' understanding in music lessons (Dzamashvili, 2020). Subsequently, the effectiveness of conducting musical lessons requires mainly communication between teachers and students with the support of visual learning material that fit to help students in accordance with stronger mental image of musical experience (Fortuna, 2017). To ensure that students are motivated and progressively positive, the use of blended teaching method with an appropriate learning strategy able to help in balancing student's motivation based on visualization must be integrated to increase the potential of receiving clear instruction by the instructor, and to support student's learning progress.

Problem Statement

The evolution of online teaching and learning requires a blended method that is synchronous and asynchronous to enhance students' achievements in music learning (Cremata, 2021). Synchronous learning involves live sessions with students using a digital platform and synchronous learning occupies a social application to interact with students for the purpose of feedback and evaluation. However, there are a few concerns of constraints in applying the blended learning method towards music practical lessons. Both the teachers and students have limited knowledge about enhancing the audio technical problem (Marins, 2017), which causes audio latency during synchronous learning, especially in online music practical lessons. Students do not practice their musical instruments regularly due to a lack of motivation from their teachers, meanwhile, synchronous lessons are usually held once a week and students will have to wait till the next lessons for getting feedback and advice from their teachers. Based on the current situation, blended learning using synchronous and asynchronous with appropriate visual media in music lessons enables to achieve student's performance and social presence between teacher and student. Students uses the e-learning platform to retrieve notes and videos from educators and likewise, students may upload their musical performance on the e-learning to help educators evaluate their performance. Firstly, using media technology in synchronous online teaching to improve visualization, audio latency and minimize audio interruption, as a result, choosing the right digital tools is important to conduct synchronous music practical lesson (Yücetoker *et al*.,2021). Teachers use social applications as asynchronous learning to give students motivation support and advice for improvement (Cremata, 2021). Consequently, blended classroom with synchronous and asynchronous learning brings flexibility and convenience opportunity for students to attend lessons at their own pace, in accordance with proper visual media as a supporting tool to promote student's achievement in music performance. The digital platform conceives a learning space such as conducting synchronous lesson, meanwhile, social applications enable student to receive feedback and to post their performance to their teachers as an asynchronous learning.

Objectives

i. To design learning activities through blended learning with synchronous and asynchronous approach for music lesson based on visualization strategy.
ii. To identify the effect of learning activities for music lesson using blended learning with synchronous and asynchronous approach based on visualization strategy towards students' music performance skill and achievement.
iii. To identify the correlation between students' music performance skill and achievement towards learning activities for music lesson using blended learning with synchronous and asynchronous approach based on visualization strategy.
iv. To find music students' perception on learning activities for music lesson using blended learning with synchronous and asynchronous approach based on visualization strategy towards their music performance skill.

Conceptual Framework

Blended learning with synchronous and asynchronous based on visualization strategy facilitate teaching and learning progress. The method of using visualization strategy accommodates the requirements in attaining higher achievements for student's learning experience through sense of presence. Using visual media in synchronous and asynchronous during the learning process able to help students acquire the lesson content, making them feel the reality of musical concept. This is especially, when teachers sketch on the musical notation to help students get the

wider picture of the musical content as well as applying their knowledge in their musical performance. Framework as structured below.

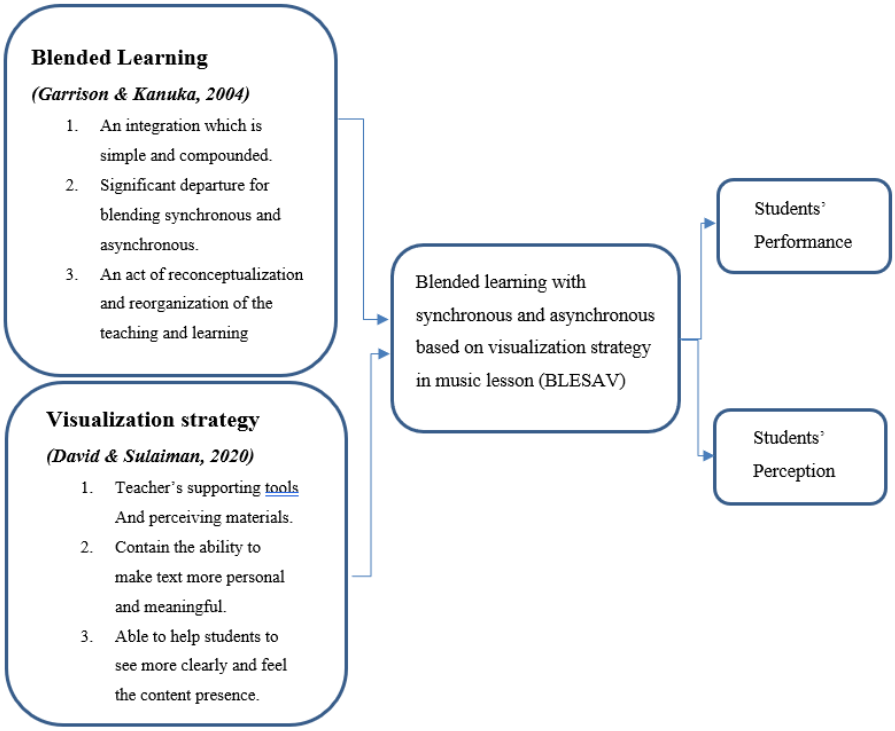

Figure 1 Conceptual framework

Literature Review

Performance Skill in Music Lesson

Structured music lessons greatly increase children's cognitive abilities, such as language-based reasoning, brain-memory, lesson structure, and inhibition, in accordance with level of academic achievement. The study, which was published based on the first largest scale of studies in Frontiers in Neuroscience, normal school curriculum was involved in the long-term research study. Visual arts classes were shown to be applied to boost children's visual and spatial memory considerably. Due to competition with academic courses and a growing shortage of funds, music instruction has been destroyed in schools all over the world. Nowadays, the ability to examine using an instrument is seen as an advantage rather than a required component of schooling. Despite the evidence that music has cognitive benefits, music is vanishing from the general education curriculum, says Dr. Arthur Jaschke, who co-led the study with Dr. Henkjan Honing and Dr. Erik Scheder from VU University Amsterdam. This prompted us to embark on a long-term investigation into the impact of music instruction on cognitive skills that may underpin academic accomplishment (Jaschke *et al*., 2018). Music lessons increased language-based thinking, as well as the capacity to restructure, organize, and execute activities, as well as to achieve academic performance. It mentioned that cognitive skills in music lessons might affect children's cognitive ability in entirely irrelevant topics, resulting in enhancing the overall academic performances. The researchers believe that their findings will help to raise awareness of the role of music and the arts in human culture and cognitive development. Music lessons with the support of blended learning using synchronous and asynchronous based on visualization able to help students to feel the content presence to achieve a greater musical understanding. Implementing visual media into online learning nonetheless supports teaching and learning to set a higher goal towards blended learning.

Blended Learning in Music Lesson

Blended learning blends engaging in-person and online classes and activities, giving students more flexibility over their pace, duration, location, and, ultimately, their route of learning (Tucker, 2019). This technique improves their abilities to use and integrate digital technology in learning and teaching (Lemon & Garvis, 2016). With a plethora of understandings regarding blended learning, educators may need to re-evaluate how such an approach should be adopted if teaching is to properly respond to the effects of COVID-19. Because of the intricacies of developing a successful method necessitates a redefinition of the student-teacher learning connection (Garrison & Kanuka, 2004). This could include shifting the emphasis from instructor to student, material to experience, and technologies to pedagogies (Dziuban *et al*., 2018; Oliver & Trigwell, 2005). Implementing blended learning in the classroom thus necessitates extensive planning as well as a thorough understanding of what it entails. This covers the impact on the teacher's position, the student experience, course content, and the mode of delivery employing technology and in-class materials. There is a need to build linkages between university classes and 'imagined' school classrooms for those who are in the process of learning their craft and inventing various teaching techniques such as blended learning (Saeed & Ahmed, 2021; Carrington & Salva, 2010). Asynchronous e-learning, which is frequently assisted via media such as e-mail and discussion boards, helps learners and teachers maintain cooperative relationships even when participants are not online at the same time. As a result, it is an essential component of adaptable e-learning. Indeed, many people attend online courses because of their asynchronous environment, allowing them to balance education with work, family, and other responsibilities (Gördeslioğlu & Yüzer, 2019). Asynchronous e-learning allows students to access an e-learning platform at any time and download papers or communicate with teachers. Students may spend more time honing their attentiveness, which is often believed to be more thoughtful than synchronous communication. Synchronous e-learning, which is typically accompanied by visual media such as video conferencing and chat, could assist e-learners in the establishment of learning behaviour. By asking and responding to questions in real time, learners and teachers perceive synchronous e-learning to be more sociable and to minimize irritation. Synchronous sessions let e-learners feel like participants rather than isolated individuals. The necessity of accommodating online learning is to have effective blended learning in music lessons, and the use of visual media able to help students learn better, and master their performance skills (David & Sulaiman, 2021).

Integration of Visual Media in Music Lesson

Musicology challenges could be supported by proper visualization strategies. For such a visual media designation, it is necessary to have a proper design and strategy (Khulusi *et al*., 2020). It utilizes many types of visual media for the study goal, the main problem was probably regarding the interfaces for music production such as the piano roll for visualization purposes. The employment of projected and non-projected visual media has had conflicting outcomes in theoretical evaluations and practical research (Vadsariya, 2018). As a result, it would be suitable to focus the study on both projected and non-projected visual media. As a result, this research examines several visual tools to determine their effectiveness and classroom application. As previously stated, the notion of a techno-cultural environment, as well as the concept of visual literacy, is not new in the field of education. The capacity to build meaning from visual pictures is referred to as visual literacy according to the research by Ali and Ahmed (2019). It entails the acquisition of a set of abilities necessary to interpret the content of visual information, to evaluate, reflect, and to derive meaning from visuals (Metros, 2008). However, the research by Vermeersch and Vandenbroucke (2015) found that the need to understand and comprehend visual representations is only present in the curriculum in an outer way. Such a requirement exists in the field of education, where pupils should be taught visual literacy. Visual literacy can sometimes develop on its own, without much assistance from the instructor. Thus, according to Vermeersch and Vandenbroucke (2015), such spontaneous learning to understand visual representations typically leads to the development of lower order cognitive skills. Students must be taught visual literacy abilities in order to instill higher thinking skills in them. However, the researcher defines classroom as an essential area for most kids' literacy development in their learning. According to Khulusi *et al*. (2020), research visualization in music learning is an advantage in helping students recognize musical notation and it can be considered as visualization strategy in a musical context.

Visualization Strategy in Music Lesson through Blended Learning

Visualization in music allows for conveying emotion and stimulates the listener's mood, likewise, music unable to be composed or performed without affection involved. Visualization capable of creating flexibility, creativity, and multidimensional facilitates the presence of abstract data in collaborating with Thayer's model in determining LED

light colours in corresponding to music emotions. It proves that visualization in supporting musical performance competent to enhance its implementation experience (Nguyen *et al.*, 2017). Most of them said that blended learning education for music should include a good mix of face-to-face interaction and online learning (Edward *et al.*, 2019). Furthermore, several music experts, particularly in the music field, have stated that traditional education is no longer adequate for teaching any kind of music (Shahid *et al.*,2017). They advocated for student-centered learning and cited blended learning as one of the most effective ways of teaching music. The primary goal of employing these techniques was to keep students' interest and attention throughout the class (Danilov *et. al.*, 2019). However, they discovered that using visual media enhanced their attribution and engagement. Students' despite demonstrating their curiosity, they also created important connections between the curriculum's material and their personal behaviour. After considering these advantages, this study undertakes a study to understand more about the impact of visual media on students' learning. The use of visual media in the classroom is nothing new. For decades, educators have recognized the benefits of visual materials to motivate students, increase their participation, and improve their learning (Fortuna & Nijs, 2020). As researchers investigate the exploitation of visual media and the efficacy of instructional pedagogies used by teachers, video recording is expected to be a useful tool. However, this may be obtrusive and disturbing to kids in their learning process (Celepkolu *et al.*, 2020). Chaeruman *et al*. (2018) found that the model of criteria in appointing the proper blended learning strategy was clear, logical, and systematic with the support of sufficient underlying theories.

Methodology

This research employs a quasi-experimental design, seeking validation from teachers and field experts regarding learning activities through a blended learning approach utilizing a visualization strategy. The focus is on assessing the impact of a blended learning approach on students' musical performance skills and achievements. A quantitative design is adopted, supported by quantitative data, wherein descriptive statistics are employed to examine students' perceptions of learning activities when combining synchronous and asynchronous elements with the visualization strategy to enhance their musical performance skills. The study utilizes the Wilcoxon Signed Rank Test and Spearman Correlation to measure the effectiveness of learning activities in music lessons.

Sample and Population

This research involves sample group of primary school students in a music centre in Singapore age between 8–11-year-old. Purposive sampling was done involving 25 students from three main music centre with permission from the Director of the music centres. Overall, the project was conducted in two months, however, the treatment design activities were conducted in six weeks duration. The participants were explained regarding their protection of identity privacy, and they were free to withdraw during the research within six weeks of activity. This is to ensure that there were no force acts throughout the research.

Instrumentation

Research instrument is used to access social sciences and student's education experience. The scoring rubrics according to student's pre-activity and post-activity performance (Trinh, 2020) and Blended Learning Environment Questionnaire (PBLEQ) (Han & Ellis, 2020) were applied to measure student's learning outcomes and perception in this research. Accordingly, there were three research instruments including the online visual music lesson platform involved in this research study. Apart from that, the researcher uses the responses from students' perception to support the data analysis on music students' perception of learning activities for music lesson using blended learning with synchronous and asynchronous approach using visualization strategy towards their music performance skill. Visualization strategy refers to visualizing textual information that is stored within the mind, forming mental nonverbal in describing or picturing the learning context (David & Sulaiman, 2021). Visualization strategy helps students understand how to practice musical performance effectively and to sustain their learning ability in gaining a better learning experience. For example, using colorful icons or fonts to support student's recognition of musical notations and lesson notes reminders (Dzamashvili, 2020). In week one, students undergo the pre-activity which was such lesson conducted in synchronous without any visual media backup in conjunction with students' theory musical knowledge grades. Musical performance rubric score and musical theory achievement grading score of pre-tests were recorded to compare the effectiveness of learning activities towards student's music performance skill. The following week, the teacher approached students with learning activities for music lesson using blended learning with synchronous and asynchronous based on visualization strategy. During week six, post-activity performance rubric

score and post-test achievement grading score were conducted to examine the correlation of effectiveness in learning activities towards student's music performance skill. Questionnaire was conducted by the researcher for this study which consisted of two sections. Synchronously, student's perception towards online music class with visual media integration. Students had to compare using the Likert Scale (1 = Strongly Disagree, 5 = Strongly Agree), blended learning with synchronous and asynchronous learning in terms of ability to perform their musical skills for elements of knowledge, playing techniques, and musical knowledge application in their musical instrument performances. Asynchronously, students were also required to rate their learning activities based on visual media that was attached for their asynchronous learning support during the process (1 = Strongly Disagree, 5 = Strongly Agree). The survey questionnaire was designed in such a way as to ensure that the scaled items suitably reflect the proposed domain.

Instrument Validity and Reliability

A music teacher who has more than 10 years' experience in teaching music lessons is involved in this research. The music teacher has been appointed as a content expert to evaluate the learning content and suitability of the online music lesson. An educational technology field expert with more than 10 years' experience validated the design and development of learning activities through blended learning with synchronous and asynchronous for music lesson based on visualization strategy.

Data Analysis

Design learning activities through blended learning with synchronous and asynchronous approach for music lesson based on visualization strategy

Students undergo pre-activity music performance test by performing a song which they were familiar previously by sharing their screen in order for teacher to evaluate their music performance skill in addition to examine student's deficiency. On top of that, pre-test achievement was conducted using the Quizizz platform as shown in Figure 1 to examine student's level of musical theory achievement.

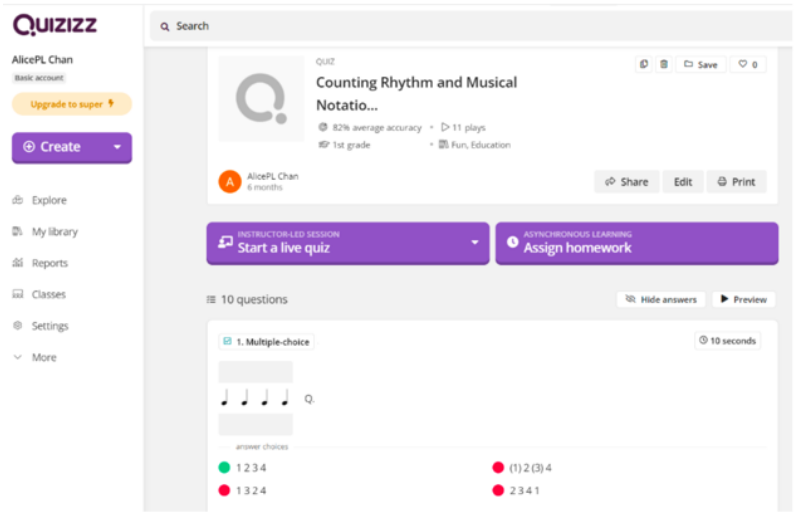

Figure 2 Quizizz platform

Activity conducted synchronously using Zoom application with the support of visual media being displayed such as learning videos from YouTube showing a set of musical notations to assist students in tracking the notation on musical sheet and identifying the musical notes in the shortest time as possible and visualized musical instrument fingerboard to indicate musical notation positioned on the instrument as shown in Figure 2 for ukulele and Figure 3 for piano teaching. Asynchronous using Google Classroom (Figure 4) during activity two was used solitary as memorandum for students' reference with visual media tools.

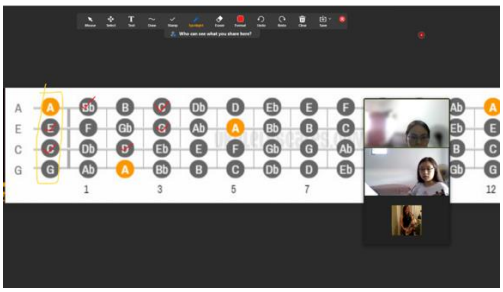

Figure 2 Ukulele fingerboard

Figure 3 Piano keyboard

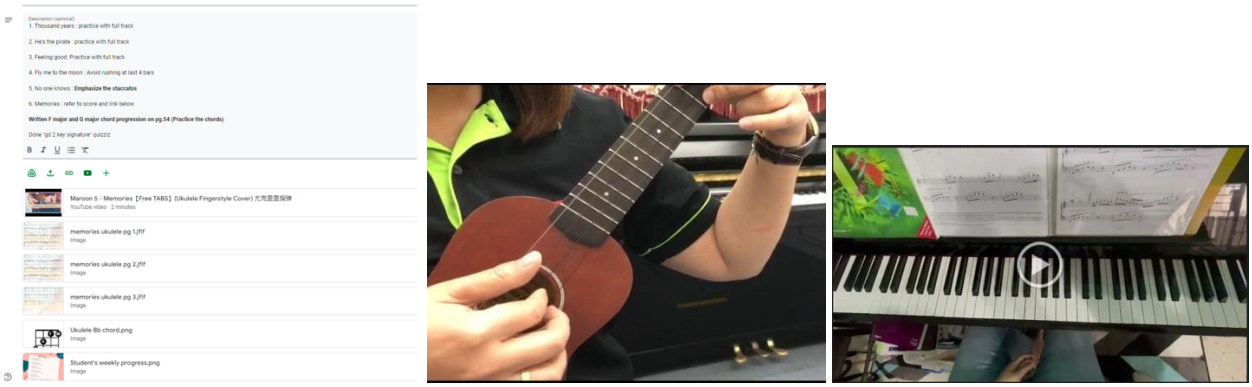

Figure 4 Learning Materials Attached in Google Classroom

Data Analysis on Student's Music Performance Skill and Achievement

Pre-activity and post-activity of students' music performance skill were conducted in this research interminably before and after students experiencing the learning activities using blended learning based on synchronous and asynchronous in favor of visual media using zoom, google classroom and WhatsApp. Customarily, the teacher conducted online synchronous lessons using Zoom, attached lesson content with video demonstration as student's supplementary reference and utilized WhatsApp as additional videos and feedback purposes. On that account, teachers initialized students' performance skill in rubric scores as shown in Figure 5 before and after the learning process. From here we obtain student's music performance skill using inferential analysis.

	Poor (1point)	Fair (2 points)	Good (3 points)	Excellent (4 points)
Pitch Accuracy 4 points	Most pitches are played incorrectly and student unable to track the musical notes in the score sheet.	Many of the pitches are played incorrectly, but student able to track the musical notes in the score sheet.	Played most of the pitches correctly with minor errors and able to track the musical notes in the score sheet.	Confidently plays all pitches and musical notes accurately.
Rhythmic Accuracy 4 points	Most rhythm incorrectly delivered.	Some basic rhythms are performed correctly, but some rhythm error occurred in specific measurements.	Rhythms were performed correctly in most of the phrases with minor errors.	Confidently delivered proper rhythms.
Style and expression 4 points	Style and expression of the piece is not carried out during performance.	Style and expression were carried out only in some parts of the piece.	Most of the piece were performed with accurate style and expression.	The performance were delivered with excellent style and expression.
Instrument Proficiency 4 points	The quality of sound and tone produced from the instrument were undefined.	Limited sound and tone consistency were used in performing.	Able to deliver a consistent sound and tone throughout the piece.	Student performed the piece with an outstanding and appropriate sound and tone the piece.

Figure 5 Rubric Score

Quizizz platform use as a pre and post-test achievement, and the questions were directed with multiple choice selection with four options and students were required to pick the correct answer for each question in within 10 seconds time frame. The content of this quiz covered the main 4 criteria of musical performance skill. The pre-test and post-test for students' achievement grading scored as shown in Figure 6 on quizzes were carried out to test the correlation between student's pre-post-activity performance and pre-post-test achievement. A total grading score displayed at the end of test.

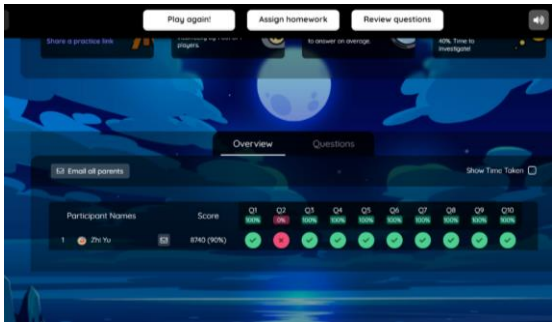

Figure 6 Quizziz Grading Score

Data analysis Correlation between Student's Music Performance Skill and Achievement

The activity was held using Zoom application and Quizizz to examine student's music practical performance skill and musical theory achievement. Students were able to accomplish their learning outcome by performing their musical skill (Figure 7) through synchronous lesson in furtherance of teacher to evaluate student's music performance skill precisely based on the rubric score. In conjunction to their achievement in completing Quizizz musical theory.

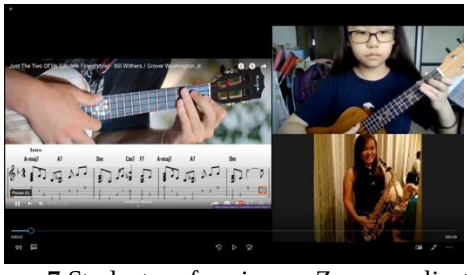

Figure 7 Student performing on Zoom application

Data analysis on Student's Perception

This study aimed to examine student's perception in experiencing the learning activities using blended learning with synchronous and asynchronous based on visualization strategy. The survey questionnaire was administered to obtain data from student's perceptions with respect to their learning experience. These student perceptions regarding gaining knowledge, comfortability, and musical performance skill were domain to support the active learning theory,

i.e., learning by watching visual medias, watching to practical implementation, implementation to musical performance. The finding outcomes were analyzed according to student's demographics to determine patterns for a variety of populations within the groups of samples. This analysis is important for teachers and for the course designers to enable them to adjust learning content based on student's demographic and understanding in their classes.

Results

The study conducted pre-activity and post-activity performance to examine student's accomplishment of learning activities towards music performance skill within six weeks program based on five learning activities predominantly using visualization strategy synchronously and asynchronously. A set of rubric score was carried out to observe 25 music students' pre and post music performance skill resulting 100% of the music students achieving increments in their music lesson using learning activities through synchronous and asynchronous based on visualization strategy. The difference between pre-activity and post-activity performance skill shows the highest score 43.75% and the lowest 6.25%. Out of 25 students, 16% of the music students obtained distinction in music performance skill during the post-activity after completing the five weeks learning activities, meanwhile, most of the music students obtain merit grade. However, the learning activities carried out improved the results of 32% music students to achieve pass grade during the post-activity appraisal. According to results, majority of the music students show positive improvement in contrast with pre and post activity. Based on Table 1, there is significant difference between the pre-activity and post-activity of the student' music performance skill score. This shows that students' music performance skill has increased during the post-activity.

Table 1 Pre and Post-test Activity Music Performance Skill using Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
post-activity performance - pre-activity performance	Negative Ranks	0[a]	.00	.00
	Positive Ranks	25[b]	13.00	325.00
	Ties	0[c]		
	Total	25		

a. post-activity performance < pre-activity performance

b. post- activity performance > pre-activity performance

c. post-activity performance = pre-activity performance

	post-activity performance - pre-activity performance
Z	-4.403[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The learning activities implemented shows a positive impact on the effect of blending synchronous and asynchronous using visualization strategy towards student's music performance skill. Aside from that, a set of pre-test and post-test of music theory to examine the effect of learning activities towards student's achievement was conducted. A total of 10 music theory questions were distributed to the music students and the score was generated by the Quizizz platform. Each question obtains 10% carry mark and a total of 100% to be scored by the music students. Majority of the music students achieved increment in their achievement based on learning activities conducted by using game based. However, there were four students resulting no changes during pre-test and post-test achievement. Meanwhile, 24% of the students obtained the highest differences which scores 20% differences during pre-test and post-test achievement score compared to 52% of the students who obtained 10% of the score differences. More than half of the music students obtained distinction in music theory achievement during the post-test after completing the five weeks learning activities, meanwhile, 8% of the music students scored merit, and 16% students obtained pass. However, there were no students who were unclassified during the achievement test. 84% of the

music students show positive improvement in contrast with pre-test and post-test achievement, and few students result in equal achievement. This shows that blending synchronous and asynchronous based on visualization strategy in music lesson has positive impact towards student's achievement by looking into 84% out of 25 music students has improved during the post-test achievement evaluation. There is a significant difference between pre-test and post-test of the student' achievement score as shown in Table 2.

Table 2 Pre and Post-test Achievement using Wilcoxon Signed Ranks Test

		N	Mean Rank	Sum of Ranks
Post-test achievement – Pre-test achievement	Negative Ranks	0[a]	.00	.00
	Positive Ranks	20[b]	10.50	210.00
	Ties	4[c]		
	Total	24		

a. Post-test achievement < Pre-test achievement

b. Post-test achievement > Pre-test achievement

c. Post-test achievement = Pre-test achievement

	Post-test achievement – Pre-test achievement
Z	-4.099[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

The learning activities implemented show a positive impact towards the effectiveness of blending synchronous and asynchronous using visualization strategy towards student's achievement. The overall list of students' music performance skill through pre-post-activity data was collected using rubric scores and pre-post-test achievement was test based on grading. The comparison of student' music performance skill and achievement towards learning activities were carried out individually as pre-post-activity and pre-post-test to find the correlation between students' performance skill and achievement. Based on Table 3 there is a statistical correlation between pre-activity of students' performance and pre-test of students' achievement scores.

Table 3 Pre-performance skill and pre-test achievement correlation

			pre-activity performance	pre-test achievement
Spearman's rho	pre-activity performance	Correlation Coefficient	1.000	.536**
		Sig. (2-tailed)	.	.006
		N	25	25
	pre-test achievement	Correlation Coefficient	.536**	1.000
		Sig. (2-tailed)	.006	.
		N	25	25

**. Correlation is significant at the 0.01 level (2-tailed).

However, there is no statistically significant correlation between post-performance and post-achievement score among the music students as shown in Table 4, despite, the pre-activity and post-activity music performance skill reveal changes among the music students.

Table 4 Post-performance skill and post-test achievement correlation

			post-activity performance	Post-test achievement
Spearman's rho	post-activity performance	Correlation Coefficient	1.000	.461*
		Sig. (2-tailed)	.	.023
		N	25	24
	post-test achievement	Correlation Coefficient	.461*	1.000
		Sig. (2-tailed)	.023	.
		N	24	24

*. Correlation is significant at the 0.05 level (2-tailed).

Data questionnaire regarding students' perception on learning activities using blended learning based on visualization strategy towards music performance skill distributed with a variable of response content. The two main criteria to measure students' perception were categorized as synchronous and asynchronous; four items each individually, and the choices given were based on a set of icon presentation to represent Likert scale one to five. 72% of students agreed interactive quiz helps them better in synchronous music learning, and 60% of the students acknowledged that using YouTube video during synchronous lesson able to help them to understand how the song should be sounded. In addition, 60% of the music students agreed that Google Classroom helps to keep track of students' learning progress and 60% of the students accepted that YouTube music attached in the Google Classroom was useful for practice routine in synchronous learning. According to the data analysis on Table 5, majority of the music students agreed with the statement that using synchronous and asynchronous learning activities based on visualization strategy is able to enhance students' music performance skill.

Table 5 Student's Perception

No.	Synchronous					
1	Zoom application for online classes makes me happy.	0%	0%	8%	56%	36%
2	Music demonstrate by the teacher during Zoom helps me play better on my musical instrument.	0%	0%	0%	52%	48%
3	YouTube video shown by the teacher during lessons helps me understand how the song should be sounded.	0%	0%	8%	32%	60%
4	Interactive quiz helps me better in learning music.	0%	0%	0%	28%	72%
	Overall Mean	0%	0%	4%	42%	54%
No	Asynchronous					
5	WhatsApp helps me to communicate with teacher better.	0%	0%	28%	24%	48%
6	Video demo sent by the teacher was helpful in my practice routine.	0%	0%	4%	40%	56%
7	Google Classroom helps me keep track of my learning progress.	0%	0%	8%	32%	60%
8	YouTube music attached in the Google Classroom was useful for me in my practice routine.	0%	0%	12%	28%	60%
	Overall Mean	0%	0%	13%	31%	56%

Discussions and Recommendation

The design and development of the learning activities through blended learning with synchronous and asynchronous approach for music lessons based on visualization strategy was evaluated and validated by an experienced music teacher and a field expert resulting accepted with a few comments of improvements. The music teacher agreed to all the design and development of well-structured learning activities, however, stated that there were few aspects to improve in supporting online music lessons. The design of blending synchronous and asynchronous based on visualization strategy in music lesson to promote music students' performance skill was accepted by the field expert despite of leaving few comments regarding video labels and tutorial video caption attached for students obligate to appropriate and named precisely according to the subject matter. Additionally, the field expert suggested using a variety of multimedia elements such as animations and infographics in this integration. The learning activities held on Zoom application were effective in conducting lessons in conjunction to show more learning content and information to the music students in terms of teachers and students were able to adapt to online mode of learning. As mentioned in the previous research by Eman (2021), teachers find it productive to develop teaching using technological tools wherein the social awareness using Zoom application able to enhance students' learning outcomes. Using WhatsApp and Google Classroom through asynchronous teaching and learning as supplementary support provide a larger opportunity for teachers and students to interact and solve problem instantly. Maros *et al.* (2020) stated that social media is important in communication, especially towards social mobilized event including remote learning. Using visualization strategies such as providing visual media in blending synchronous and asynchronous music lessons offers better reflection towards music students' performance skill by helping students to trace their progression, feel the content presence, and implement music practical performance skill. Celepkolu *et al.* (2020) corroborate that using visualized tools such as video recordings adequate to identify students' learning goal.

The learning activities using blending synchronous and asynchronous based on visualization strategy was effective towards student's music performance skill. The frequency distribution of scores among the students according to rubric score for the music performance skill was presented, it is revealed that 56% of students obtained unclassified, and minority students scored passed during the pre-activity observation. Having said in research conducted by Vadsariya (2018), teachers need to select the proper tools to implement visual media in classrooms to support learning and teaching, hence, video demonstrations to support students by watching to practical accomplishment. It is seen that blending synchronous and asynchronous based on visualization strategy in music lesson has positive impact towards student's music performance skill by looking into the post-activity improvement score, referring to students' score developed from 0% unclassified, 8% pass, 13% merit, and 4% distinction. Gördeslioğlu and Yüzer (2019) mentioned that listening assignment and aural tasks lead to implications in associating online task design, therefore, learning activities in this study were designed precisely to accommodate the needs of students' music performance.

The learning activities were designed to focus on a few phases, learning by watching visual media, watching to practical implementing, and lastly, implementing to performance skills. Shahid *et al.* (2017) described that there was limited awareness given to the quality of e-learning tools and its consequence on e-learning system. However, using visualized quizzes as e-learning tools enhances student's achievement, revealing that 84% of the music students improved by comparing the pre-test and post-test achievement. Although students should know the way to interpret visual literacy in classrooms to support understanding and implementing new knowledge as suggested by Ali and Ahmed (2019), on that account, 16% of the music students obtained no changes during pre-test and post-test achievement.

The learning activities implemented obtained beneficial impact towards the effect of blending synchronous and asynchronous using visualization strategy towards student's achievement as data analysis carried out shows significant difference between pre-test and post-test of students' achievement. The correlation between student's pre-post-activity music performance skill and pre-post-test achievement shows contrasting correlations during pre and post results. Firstly, pre-activity students' performance and pre-test students' achievement by looking into pre-activity performance and pre-test achievement, 2% of the music students obtained highest difference with 50% improvement who scored 50% during pre-activity performance and scored 100% on their pre-test achievement, hence, the study revealed that there was statistically correlation. Jaschke *et al.* (2018) acknowledged that primary school student experiencing visual content excels better in memories task. However, there was no significant

correlation during the post-activity students' performance and post-test students' achievement, resulting p=0.023; p>0.05. This is likely related to students discover to sustain music performance skill and music theory knowledge in their own learning ways as stated by Gutierrez (2019) which students are very likely able to perform better without the need to achieve in musical theory. In addition, 54% students gave positive response on using synchronous online learning in music lesson and 56% of the students agreed that asynchronous music lesson enhances their music performance skill. Synchronously, Tucket *et al.* (2017) revealed that blended learning able to reinvent education as a new approach to learning and teaching for educators and students, in addition, Winter *et al.* (2021) remarked teachers improve the ability to integrate teaching and learning using new technology such as visualized materials. The opportunity in this learning activity provides a broader interactive connection between teacher and student by using technological tools as 60% of the music students in this study agreed that Google Classroom helps to keep track of their learning progress and 48% of music students strongly agreed that WhatsApp assists them to communicate better with their teacher.

Conducting asynchronous lessons by attaching visual media such as video demonstrations may be obtrusive and disturbing to students in their learning process as stated by Celepkolu *et al*. (2020) in previous research. However, the data analysis in this research has shown that majority of the music students voted strongly agree with the statement in asynchronous items. In general, 56% of the music students strongly agreed that the video demonstration sent by the teacher was helpful in their practice routine and 60% of the music students strongly agreed that YouTube music attached to the Google Classroom was useful for their practice routine. Therefore, learning materials attachment acts as a supporting tool to enrich students' music practices in their own pace. Using technological tools to conduct music lessons develops positive interrelation between teacher and student which was clarified by Shahid *et al*. (2017). Several limitations to the current study need to be considered in future research. Firstly, the observation period should be taken into consideration for students' retention performance after being involved in the learning activities to promote students' well-being throughout their understanding (Rathmann *et al.*, 2020). Further investigation of teachers' perceptions using synchronous and asynchronous based on visualization strategy such as using video demonstration credible to provide their expectations towards students' motivation and students' achievement outcome. Additional investigation towards the impact of teaching and learning appraisal after teachers being exposed to educational technological tools workshop. Besides, Supartini *et al.* (2020) stated that it is essential to examine students' improvement toward learning activities through cognitive perspective, assessment effectiveness, and psychomotor development over the course of time to observe in general.

Conclusion

According to previous research by Danilov *et al.* (2019), blended learning is highly encouraged to support music learning with proper visual materials. Nonetheless, the arrangement of teaching content and materials is obliged to accommodate guidance toward students' musical concept learning experience in blended learning (Muxtorjonovna, 2020; Garrison, 2004). Additionally, blending synchronous and asynchronous using visual media motivates students to practice with self-access to persevere the knowledge they have learnt (Hariadi & Simanjuntak, 2020). Blending synchronous and asynchronous based on visualization strategy in music lesson able to enhance students' music performance skill. The results of performance among the music students show positive improvement predominantly. However, music theory achievement among the music students revealed unvarying scores throughout the learning activities. Although there was no correlation between music performance skill and music theory achievement, the result of students' music performance skill was nevertheless showing positive improvement. In conclusion, this research has achieved its research questions. This research works optimistically a beneficial to related individuals and organizations to enhance music education in pursuance of music performance for future generations.

Limitations and Future Studies

Several limitations to the current study need to be considered in future research. Firstly, the observation period should be taken into consideration for students' retention performance after being involved in the learning activities to promote students' well-being throughout their understanding (Rathmann *et al.*, 2020). Further investigation of teachers' perceptions using synchronous and asynchronous based on visualization strategy such as using video demonstration credible to provide their expectation towards students' motivation and students' achievement outcome. Additional investigation towards the impact of teaching and learning appraisal after teachers being exposed to educational technological tools workshop. Besides, Supartini *et al*. (2020) stated that it is essential to examine

students' improvement towards the learning activities through cognitive perspective, assessment effectiveness, and psychomotor development in the long run to observe in general.

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