GAMIFICATION METHOD IN MUSIC EDUCATION AND ITS IMPLEMENTATION IN PUBLIC PRIMARY SCHOOLS IN BEIJING, CHINA

By

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Master of Science

September 2024

FEM 2024 25

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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Gamification teaching has become one of the main teaching methods used by Chinese primary school music teachers. However, the level of teachers' use of gamification varies and students' learning initiative in the classroom can be influenced by their teaching methods. Hence, there is a need for a more in-depth study of the way gamification is implemented in primary music classrooms. The is a case study on the application of gamification methods in primary school music education in Beijing, China, to investigate the content, use and factors influencing teachers' use of gamified teaching methods in music classrooms and to explore the challenges encountered by the teachers. The participants of the study were 90 students and 3 music teachers from 1st, 2nd and 3rd grades of the No. 2 Experimental Primary School in Shijingshan District, Beijing, China. Research data were collected through 47 lesson observations and 3 interviews. Data were analysed through thematic and comparative analyses. The study found that the current situation of music teaching in this primary school had the following aspects: 1) the number of music lessons per week is reasonably organised;

2) teachers were able to choose appropriate teaching content according to the age of students, but the number of times of effective gamification was relatively low. Factors affecting the use of gamification were 1) influence of students' learning status, lesson content, teachers' preparation time and lack of training, and the presence of other teachers in the classroom; and 2) The type of game in terms of its flexibility and convenience, whether the game will disrupt the classroom, the difficulty of the game, and the materials used in the game. The teachers mainly faced three challenges in using gamification: 1) inadequate professional teaching skills; 2) inadequate facilities for teaching music; and 3) influence of lessons time on the effectiveness of teaching. To overcome these challenges, it is recommended that: 1) training can be categorised according to the needs of teachers and the characteristics of the music, while enriching the forms of participation in training; 2) choosing appropriate gamified content; and 3) flexible use of game teaching aids. In addition, the use of gamification occasionally increases the number of times the teachers needed to maintain order, potentially creating difficulties for teachers when teaching music, which could be explored in depth in future research. The findings of this study on effective gamification methods can be used as references to improve teachers' use of gamification and the quality of their teaching, increase their willingness to use gamification, and provide better learning environments that will enhance students' learning experiences.

Keywords: Gamification, Implementation, Music Education, Primary School, Music Teacher

SDG: GOAL 4: Quality Education

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

KAEDAH GAMIFIKASI DALAM PENDIDIKAN MUZIK DAN PELAKSANAANNYA DI SEKOLAH RENDAH AWAM DI BEIJING, CHINA

Oleh

WANG FANG

September 2024

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Pengajaran gamifikasi telah menjadi salah satu kaedah pengajaran utama yang digunakan oleh guru muzik sekolah rendah Cina. Walau bagaimanapun, tahap penggunaan gamifikasi guru berbeza, dan inisiatif pembelajaran pelajar di dalam bilik darjah boleh dipengaruhi oleh guru kerana kaedah pengajaran mereka. Oleh itu, terdapat keperluan untuk kajian yang lebih mendalam tentang cara gamifikasi dilaksanakan dalam bilik darjah muzik sekolah rendah. Kajian kes ini adalah mengenai aplikasi kaedah gamifikasi dalam pendidikan muzik sekolah rendah di Beijing, China untuk menyiasat kandungan, penggunaan dan faktor mempengaruhi penggunaan kaedah pengajaran gamifikasi guru dalam bilik darjah muzik dan untuk meneroka cabaran yang dihadapi guru dalam menggunakan pengajaran gamifikasi dalam muzik. Peserta kajian ini ialah 90 pelajar dan 3 guru muzik dari gred 1, 2 dan 3 Sekolah Rendah Eksperimen No. 2 di Daerah Shijingshan, Beijing, China. Data penyelidikan dikumpul melalui 47 pemerhatian pelajaran dan 3 temu bual. Data dianalisis melalui analisis tematik dan perbandingan. Kajian mendapati situasi semasa pengajaran muzik di sekolah rendah ini mempunyai aspek-aspek berikut: 1) bilangan

pelajaran muzik setiap minggu disusun dengan baik; 2) guru boleh memilih kandungan pengajaran yang sesuai mengikut umur pelajar, tetapi bilangan keberkesanan gamifikasi adalah agak rendah. Faktor-faktor yang mempengaruhi penggunaan gamifikasi ialah 1) Pengaruh status pembelajaran pelajar, kandungan pelajaran, masa persediaan pengajaran oleh guru dan kekurangan latihan, dan kehadiran guru lain di dalam bilik darjah; dan 2) Jenis permainan dari segi fleksibiliti dan kemudahan dalam penggunaan, sama ada permainan akan mengganggu bilik darjah, kesukaran permainan, dan bahan yang digunakan dalam permainan. Para guru menghadapi tiga cabaran semasa menggunakan gamifikasi: 1) kemahiran profesional guru yang tidak mencukupi; 2) kemudahan yang tidak mencukupi untuk mengajar muzik; dan 3) pengaruh masa pelajaran terhadap keberkesanan pengajaran. Bagi mengatasi cabaran ini, adalah disyorkan bahawa: 1) latihan dikategorikan mengikut keperluan guru dan ciri-ciri muzik, sambil memperkayakan cara penyertaan dalam latihan; 2) memilih kandungan gamifikasi yang sesuai; dan 3) flesibiliti dalam penggunaan alat bantu pengajaran permainan. Di samping itu, penggunaan gamifikasi kadangkala meningkatkan bilangan kali guru perlu mengekalkan ketenteraman, dan berpotensi menimbulkan kesukaran kepada guru semasa mengajar muzik, dan situasi ini boleh diterokai secara mendalam dalam penyelidikan masa depan. Dapatan kajian ini mengenai kaedah gamifikasi yang berkesan boleh digunakan sebagai rujukan unutk menambah baik penggunaan gamifikasi dan kualiti pengajaran guru, meningkatkan kesediaan mereka untuk mengguna gamifikasi, dan menyediakan persekitaran pembelajaran yang lebih baik bagi meningkatkan pengalaman pembelajaran pelajar.

Kata Kunci: Gamifikasi, Pelaksanaan, Pendidikan Muzik, Sekolah Rendah, Guru Muzik

SDG: MATLAMAT 4: Pendidikan Berkualiti

ACKNOWLEDGEMENTS

I would like to give my heartfelt thanks to all the people who have helped me in this thesis. My sincere thanks and appreciations to my supervisory committee, Dr. Julia Chieng and Assoc. Prof. Dr. Loo Fung Chiat, whose suggestions and encouragement have given me many insights into this study. It has been a great privilege and joy to study under their guidance and supervision.

I am also extremely grateful to all my friends and classmates who helped and accompanied me in the preparation of this thesis. Finally, many thanks go to my family for their unfailing love and unwavering support.

This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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Date: 24 February 2025

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In education, "gamification" refers to the inclusion of game elements in teaching and learning according to the needs and intentions of the use in non-game environments (Engedal, 2015; Deterding et al., 2011). In music teaching, music play refers to teaching activities that integrate and complement both music and play to develop children's musical abilities (Zhu, 2020). The original intention of using gamification teaching is to use its high degree of fun to assist teachers in teaching activities, and to guide students to participate in interesting music activities through a systematic and scientific teaching system to improve students' classroom participation (Li, 2019).

The use of trivia games in education such as Oregon Trail and Lemonade Stand emerged in the 1970s, and by the 1980s gamification was being used more often in teaching and learning (Li, 2019). Teaching has evolved to become richer and more mature with the development of gamification in education. The music game teaching mode takes students' interest as the entry point and follows the psychological characteristics of students' love of playing. Play builds a rich classroom context, greatly enhances the fun of the classroom (Zou, 2020), and can motivate primary school students to learn in class and music, helping them to change the pattern of passive to active learning (Sun, 2017). At the same time, musical games can develop students' discipline and teamwork, and promote the development of their thinking, imagination and innovative skills. Musicality is the most important feature of musical games in teaching activities. Regardless of the type of music game, it is essentially a

game based around music rather than a game with music in it: the music is the essence, and the game is only a way of supporting the teaching.

The learning of music can be better acquired through experience and practice. With this awareness, the Chinese Education Bureau began to promote the integration of gamification into the music classroom since the year 2011. The curriculum includes not only singing but also music appreciation, instrumental accompaniment and knowledge of music theory. Changes in curriculum content and objectives have resulted in teaching approaches that are not restricted to the conventional ways of pupils reciting and singing along. In the textbook for primary school *People's Music Press Year 4*, for example, the tasks in Lesson 3 include learning about strong and weak beats as well as guiding the students in creating games. Gamification includes the usage of rhythm games (cup games, clapping games, body movement), melody games (song solitaire, melody sequencing) and creative games (lyrics creation, dance creation). For example, the cup game, which is popular among students (Zhou, 2019), begins with watching a video. This stimulates students' interest in learning. After understanding the cup game, the teacher explains the detailed movements and students learn to play step by step and then freely combine the rhythmic patterns. In this process, the teacher can adjust the difficulty level according to the students' performance to help them improve their ability to master the music rhythms.

Since the implementation of The Chinese Compulsory Education Music Curriculum Standard (referred to as the New Curriculum Standard) in 2011, quality education has gained wider attention in China, and the status of music education has gradually increased (Chen, 2019). In terms of the requirements for curriculum content, the new

curriculum standard is permeated with the concept of using gamification game-based teaching (Sun, 2018), and it is particularly recommended that music education in the young age groups (Year 1–3) focuses on the use of musical instruments and the cultivation of students' creative abilities through games (Ministry of Education of the People' s Republic of China, 2011). However, being overly influenced by traditional exam-oriented education, music education in Chinese public primary schools still suffers from deficiencies in educational concepts and performance (Wang, 2017; Pan & Pang, 2016), and most of the implementation of music education focuses on the completion of textbook content as the main task (Chen, 2019).

In *Teaching Music in the Twentieth Century* (Shehan, 1987), it is stated that children can be confused not because of a lack of intelligence but due to ineffective ways of presenting the learning materials. The effectiveness of game-based teaching is related to the ways the teachers use them in the classroom of which there can be setbacks if used inappropriately. For example, excessive highlights of games in the classroom can neglect the educational objectives (Zhang, 2014). Therefore, for a well-executed gamification teaching, a clear understanding of the content, methods and educational objectives of the curriculum among the teachers are imperative. Teachers can have different understandings of the educational aims of music lessons and use different teaching methods, and the effectiveness of game-based teaching on students' learning may be inconsistent. This necessitates the study of the current situation in the implementation of gamification in music teaching.

1.2 Problem Statement

Although there are known benefits of gamification in music education, the level of success and effectiveness as well as challenges in its implementation are yet to be studied in detail in relation to the students' classroom feedback, the ways teachers use gamified teaching and settings of music lesson. Students' classroom feedback has an impact on the effectiveness of the lessons (Wang, 2021) because teaching is not a unilateral activity of the teacher but requires interaction between teachers and students. Currently, teachers have overly control over the curriculum, which leads to a decrease in students' interest in music learning, thus affecting the efficiency of music learning (Liu, 2020; Xiong, 2020). Especially for students in the younger years (Year 1–3), their musical literacy and sense of active learning are still developing, and more interest is needed to promote their learning (Wang, 2022). Therefore, students' learning initiative not only enhances the effects of learning but also influences the effect of teachers' teaching especially in music gamification which requires a high degree of interaction between teachers and students (Ren, 2021).

Some primary school music teachers are willing to use gamification in teaching, but there can be problems and incorrect use of gamification teaching methods that easily lead to a detachment from music in the game session (Zhang, 2014). For example, the game exists by itself in a certain session without the integration of music elements and thus has no educational significance. Moreover, teachers used the game model rigidly and do not give students the space for free development (Zhang, 2021; Song, 2021). For example, in order to control the direction of the game development and achieve the set purpose, teachers require students to strictly follow the pre-established rules, which restricts students' creativity.

In gamified teaching, the multiple roles of teachers can be flexibly transformed according to the needs of students (Qiu, 2001). In music gamification, the teacher is a guide rather than the controller of the game. However, the current scenario reveals that many games in music lessons were designed by teachers and the students remain passive throughout the process (Lan, 2021; Sun, 2017). Monotonous imitation and reading from a script can ignore students' play interests and needs, hindering opportunities for autonomous play as well as the independent construction of learning experiences (Chen, 2021; Zhang, 2021; Song, 2021; Wu, 2021).

Despite the fact that games play an effective role in teaching and learning as a form of edutainment, the public perception of the value they generate is one-sided (Cristina et al., 2020; Yang & Qiu, 2020). In traditional Chinese education, the emphasis is more on achievement, assessment and peer comparison (Sun & Xiao, 2021). Hence, parents tend to place focus on students' examination results rather than quality education and this affects the development of music programmes. In general, music lessons in primary schools in China are currently set at two lessons a week for each grade, and most music teachers are able to follow the course schedule. However, music lessons are occasionally replaced by other subjects, especially during the final exams period, or when some students who obtained lower grades in other subjects being called for additional tutoring sessions by other teachers (Deng, 2019). This results in a lack of sufficient time for music learning.

In summary, although the use of gamification in classrooms is increasingly recognised by schools and educators as well as scholars in terms of its merits and importance, the quality of gamification in music education has not been achieved due to teaching

methods and teacher's dominance. Students' learning initiative in lessons, especially in the younger years (Year 1–3), is affected by teachers' teaching styles. Enhancing students' learning initiative will not only improve students' learning efficiency but also affect teachers' teaching effectiveness. Thus, there is a need for more in-depth study on the ways gamification have been implemented in primary school music classrooms.

1.3 Significance of the Study

The Chinese Compulsory Education Music Curriculum Standard states that the music curriculum is practical in nature and should actively guide students to participate in various musical activities such as singing, playing, listening, art performance and improvisation; and that the teaching process should set up lively and interesting creative activity contents, activity forms and contexts to develop students' imagination and enhance their creative awareness (Ministry of Education of the People's Republic of China, 2011). Music games not only enhance students' interest in learning but more importantly, provide an enjoyable experience that can stimulate students' interest in music.

Effective ways of implementing gamified teaching through reflections and mastering of new teaching methods can enrich teachers' teaching skills and methods. By identifying the preferences for music games of students in different age groups, teachers can design games accordingly when conducting subsequent music education activities, thus increasing students' participation in music lessons. At the same time, teachers will be able to learn about the game-based teaching methods used by other teachers and thus enrich their teaching skills. Furthermore, understanding the reasons

and obstacles influencing teachers' use of gamification through evidence-based findings can provide more accurate recommendations on the use of gamification approaches and assist teachers to utilise gamification more readily and effectively.

1.4 Research Questions

This research takes the No. 2 Experimental Primary School in Shijingshan District in Beijing as a case study through qualitative approach. The participants are three music teachers and students in Year 1 to 3, aged 6 to 9. In this study, gamification is not only the integration of games in a single lesson, but also the interspersing of games in various sessions, and the use of games in teacher-student interaction, student-student interaction as well as the use of play tools such as musical instruments and multimedia. The research questions are:

1. How are gamification used in the public primary school music courses?
    a. How is the design of the music curriculum that involves gamification in teaching and its classroom setting?
    b. How is the gamification of music teaching implemented in lessons in terms of the types of games used and their teaching content?
    c. How do the students respond to the music courses that include gamification in terms of teaching?
2. What are the factors that influence the teachers to use gamified teaching in music classrooms?
3. What are the challenges faced by the teachers in the implementation of gamification in music classrooms?

1.5 Objectives of the Study

This research was conducted at the No. 2 Experimental Primary School in Shijingshan District in Beijing as a case study. The objectives of this study are:

1. To investigate the content and use of gamified teaching in the music classroom in primary school music education in Beijing:
    a. To examine music teachers' curriculum design and lesson plans at primary school music education.
    b. To examine the way gamification is implemented in music classrooms in terms of the types of games used, the teaching aids in games and students' responses.
2. To investigate factors that influence teachers to use gamified teaching methods in primary school music classrooms.
3. To explore the challenges that the teachers encounter in using music gamified teaching method.

1.6 Definition of Terms

The list below presents the definitions of terms used in this study:

A. Gamification in Teaching:

Gamification refers to working in a non-game environment (Deterding et al., 2011) using the elements or rules of a game (Song, 2020). Gamification in teaching in this study is defined as teachers' teaching of music by incorporating the content of the curriculum into a game and using games to assist teaching.

B. Effectiveness of Gamification Teaching:

Gamification teaching effectiveness is defined as the enhancement of teaching and learning through the use of games with difficulty and skill aligned with the students'

ability level (Massimini & Crali, 1988), allowing students' learning to reach a state of voluntariness, enjoyment and immersion (Csikszentmihalyi, 1975).

C. Distracted Behaviour:

Distracted behaviour is defined as a student engaging in behaviour that is inconsistent with the teacher's instructions or unrelated to the classroom, such as talking to other students on irrelevant topic. The number of instances of distracting behaviour by the same student are recorded as N instances.

D. Teacher-Student Interaction

Teacher-student interaction is defined as students responding accordingly to questions asked or instructions given by the teacher. An instruction is when a teacher asks a student to do something or respond in a certain way, such as, stand up and sing.

1.7 Limitations of the Study

The case of this study is a public primary school in Beijing and data were collected from 7 March to 30 April 2022. The use of games in the classroom that does not have a pedagogical purpose are not included in this study; for example, some games are used to liven up the classroom rather than having teaching content. Although the findings and results of this study may be transferable in other schools in China and abroad, the content and results of this study do not represent the level of teaching and learning in all primary schools in Beijing, nor do they represent the current stage of music teaching in primary schools in China or other countries. The findings and results only address the research questions of this study that are relevant to the chosen research topic.

1.8 Organisation of the Thesis

This thesis is divided into six chapters: introduction, literature review, methodology, findings, discussion, and conclusion. Chapter 1 describes the background, the problems related to the study, the significance of the study as well as the research questions and objectives. Chapter 2 provides a review of the current literature on gamification in teaching and music game pedagogy in different countries. Chapter 3 focuses on the methodology, research design and research instruments of the study. Chapter 4 presents the data and the analyses. Chapter 5 discusses the findings. Chapter 6 summarises the research content and concludes the study.

CHAPTER 2

LITERATURE REVIEW

2.1 Literature Search Strategies

This chapter reviews the key literature related to the use of gamification in music teaching and its pedagogy in primary music education across different countries. Based on the search keywords "current situation of music education in primary school", "problems faced by music teachers", "gamification", "educational music game", "music education" AND "game", "definition of gamification" and "music games and culture", in The China National Knowledge Infrastructure (CNKI), Scopus, SAGE Journals, JSTOR, Google Scholar, JCR, TOJQI, CLANCI, TMEC, PLOS ONE, EDICIONES COMPLUTENSE, Interactive Learning Environments, Terrorism Research Initiative, JBSFM, IJCDSE and GLOBAL LEARNING COMMUNITIES 2000 from 2005 to 2022, concepts and research findings relevant to this study were reviewed and discussed (**Error! Reference source not found.**).

Table 2.1 : Number of Available Sources Found from Literature Search in Databases on Gamification in Music Teaching

Database	Number of Sources
CNKI	48 journal articles 57 master's theses 5 conference proceedings (in China)
Scopus	13 journal articles 4 books
SAGE Journals	14 journal articles
JSTOR	5 journal articles 2 books
JCR	16 journal articles 2 books
TOJQI, CLANCI, TMEC, PLOS ONE, EDICIONES COMPLUTENSE, Interactive Learning Environments, Terrorism Research Initiative, JBSFM, IJCDSE, GLOBAL LEARNING COMMUNITIES 2000	14 journal articles 5 conference papers 1 book

2.2 Teaching and Learning in Music Education

2.2.1 Teaching Methods in Music Education

In music teaching, the common method is the traditional way of singing to demonstrate (Li, 2021), but its educational emphasis on song singing and the teaching of basic knowledge skills (Chen, 2019) cannot meet the needs of music education in schools (Wu, 2021). Thus, more music teaching methods have emerged, such as the situational teaching method (Ma, 2022; Qin, 2021; Wang, 2021), somatic rhythm teaching method (Bai, 2022; Luo, 2021) and gamification method (Deterding et al., 2011; Zhu, 2020; Zou, 2020).

According to Wu & Yang (2015), situational method refers to the teacher creating a storyline and using acting with students. The situational method is very flexible and can be used in any part of teaching (Yang, 2017), and9develops students' creative thinking through the development of plots (Qin, 2021), as well as developing students' social skills and emotions (Han, 2020; Peng, 2020; Zhao, 2008). Somatic rhythmic teaching method means that students use their bodies as musical instruments to feel and express the tempo, intensity, and timing changes of music rhythm through body movements, and to train students to learn to use their sense of hearing to obtain a coordinated and relaxed sense of rhythm (Dalcroze, 1913). The somatic rhythm teaching method can enhance students' sense of rhythm and musicianship (Wang, 2021) and allow students to train their body coordination while learning (Lu, 2020). The implementation of situational method requires reliance on the creation of story scenarios and cannot be used in isolation from them (Ma, 2022), whereas somatic rhythmic pedagogy is used when training students' musical abilities and not for other

pedagogical content (Zhang, 2020), and both pedagogical methods need to be implemented through games so as to enhance the students' classroom learning experience (Jia, 2021; Kopačin, 2020; Lee & Loo, 1913), making it more accessible and interesting for students (Loo, 2020; Yang, 2019) while achieving better teaching results.

The first step in implementing gamification is to create a fun teaching situation (Han, 2020). Teachers who need to use gamification should create a fun teaching situation at the introduction of the class so that students are motivated to participate when they enter the classroom (Sun & Xiao, 2021). Secondly, music games are used to improve teaching and learning, but the focus varies; games are used to either introduce new activities more easily or to reinforce students' previously learned knowledge. Thus, the use of games must be determined by the content being taught (Zhang, 2021).

2.2.2 Learning in Music Education

Cooperative and deep learning approaches are more commonly used in primary music learning. The cooperative learning approach is designed to encourage students to realise their aspirations for the benefit of the individual and the group as they work on a common task; it is a systematic and structured learning strategy (Smith & MacGregor, 1992; Tan, 2021; Wang, 1994). The cooperative learning approach can increase the activity of the classroom and students' learning initiative, which is conducive to improving the efficiency of the music classroom, promoting students' ability to cooperate and learn independently, and promoting students' understanding and flexible use of music knowledge (Li, 2021; Song, 2021).

The term deep learning was first coined in the United States in the 1970s. For music subject, deep learning is demonstrated by the students fully participating in teaching and learning activities, either independently or collaboratively, led by the teacher, in which they acquire core knowledge and skills, and learn to apply them to solve problems, while their individual independence and creativity are fully developed (Chen, 2022; Wan, 2022; Wang, 2022; Yan, 2022). With deep learning, teachers can help students to better participate in the music classroom (Wang, 2022) and guide them to experience the music while learning (Chen, 2022).

In terms of implementation, the cooperative learning approach first create an environment for cooperation. Teachers should help students set up groups and allow students with high musical literacy and organisational skills to lead shy students (Li, 2021). Secondly, to stimulate students' interest in cooperative learning, teachers can increase students' willingness to cooperate with others by using cooperative games (Zhao, 2021). Deep learning begins with considering and finding the starting point for learning, and teachers choose more flexible and scientific teaching methods, such as dialogue-based teaching (Wan, 2022); Secondly, they use questions to facilitate the content, stimulate responses and discussions, inspire students' ideas and develop their abilities (Yan, 2022). Gamification teaching method can link these two learning methods together, through cooperative games to let students learn cooperatively and achieve the effect of deep learning through the enhancement of learning interest.

2.3 Gamification in Education

Gamification of teaching and learning refers to the incorporation of game elements or methods in the teaching and learning process so that students can enjoy learning as

much as possible (Hu, 2020), follow the rules of the game and find answers (Song, 2020). Teachers organise students' learning in the classroom by creating game situations, adopting lively and interesting activity forms, and using certain game rules (Yao, 2020).

"Gamification learning" refers to the use of gamification in the learning process, including teachers' teaching methods in the teaching process and students' learning styles in independent learning (Zhu & Wang, 2017). The educational objectives underlying the learning activities are used as motivation and content for play, and many types of games, are utilised to facilitate the students' learning (Yao, 2020). Gamification learning places more emphasis on the guidance of games for the learning process rather than the use of games (Bao & Zhao, 2015), and unlike gamified teaching, gamified learning focuses more on the state of the learner (Yao, 2020), thus gamification allows each student to learn and participate at their own pace free from peer and teacher pressure (Li & Chu, 2021).

2.4 Effects of Music Games

In music teaching, music games are not only a way to support teaching and learning but also have positive effects on students' learning experience and their development in terms of social skills and emotions.

2.4.1 Enhancement of Learning Experience

The use of gamification in the music classroom helps students to be the "protagonists" in the teaching and learning process instead of the teacher. Music games allow students

to release their activeness to the greatest extent possible and this is important for better classroom teaching (Zhao, 2008).

Wolfe (2020) designed a creative music drama game "Old MacDonald's Farm" where a group of children were shown pictures of the characters in the game and were asked to design their own plot based on the music and pictures and perform it with different musical instruments. The study found that musical games have the potential to stimulate children in a way that they are encouraged to play and thus improve the effectiveness of the classroom. As the content and format of the game are entirely created by the children, these increase their participation in learning through the game. Musical games allow participants to remain relaxed, alert and active during group activities, and subsequently their attention is fully engaged in the activity beyond the teacher's expectations (Wolfe, 2020).

Music games improve the capacity of participants with less a priori knowledge and those with weaker capacities to engage in experiential learning in groups of youngsters with individual differences (Kopain, 2020). Through gamification, children may receive feedback on the learning process and are immediately informed if their answers are correct, and on their strengths and weaknesses in their learning. Receiving prompt praise for answering a question correctly makes children feel happy and successful, and this encourages them to continue learning (Lee & Loo, 2021).

2.4.2 Development of Social and Emotional Skills

The teaching activity is a compound activity and the interaction between students through participation in games helps them to develop a good personality (Zhao, 2008;

Jia, 2021). The games instil a feeling of competitiveness, elevate children's spirits, promote collaboration, maximise individual abilities (Peng, 2020), instil respect for the game's rules, and help children develop social and emotional skills.

Rajić et al. (2020) studied the effects of musical games to social skills development and socio-emotional development among children aged 8-12 years old. The study used the self-invented musical game "Musical Monkeys" where the game is played with two types of materials: different coloured coins with numbers (musical notes) and different coloured monkey cards. In this game, the students reproduce the melody and rhythm according to the melody and rhythm they hear through the recording using monkey cards of the same colour as the numbered coins. As the pupils remember and associate the colours with the sounds, they listen to the rhythm and place the monkey cards in the correct rhythmic area. The game greatly encourages collaboration and acceptance as well as develops tolerance, mutual appreciation and consideration towards other children's views when solving maths or music tasks. The authors also argue that the role of play is motivational at its highest level, encouraging children's activity, participation, cooperation, collaboration, enthusiasm, attention and concentration. Han (2020) stated that play can create a safe and comfortable atmosphere where children can gain a sense of pride and satisfaction, which can help children to release negative emotions, protect their mental health and make them easily feel happy, confident and contented.

2.5 Classification of Music Games

According to the Chinese "Music Syllabus for Nine-year Compulsory Whole-day Primary Schools (Revised Trial Version)", primary school music instruction includes

singing, singing games, instrumental music, music appreciation, music reading and sight-singing; When singing activities are not available, musical play should be integrated with other educational content such as music appreciation, avoiding games without music (Ministry of Education of the People's Republic of China, 2000).

The design and selection of game sessions are critical to the successful use of gamification methods. Students of all ages enjoy musical games and support the use of musical games in the lessons (Jasna et al., 2021). Strategic thinking allows teachers to assess the suitability of gamification and game design for curriculum content (Prasad, 2021), considering students' musical learning characteristics, age and preferences (Zhang, 2014). In a survey of students' preferences for games in the general primary music curriculum, it was found that role-playing musical scenarios, cooperative games and multi-player games were more popular among primary school students than picture games and listening games (Zhou, 2017). In some primary schools that have access to music aids, instrumental accompaniment became the more popular form of play than rhythm and movement games (Sun, 2017). In terms of the preferences of 40 choir students' preferences for musical games in their sight-reading training at a primary school in Chongqing, the most popular types of games among the primary school students were rhythmic games, followed by singing games and melodic or tonal games (Zou, 2020). The younger the pupils, the more they enjoyed the various types of musical games, but it is also important to be aware of their interests as they can change over time and with the age of the pupils (Zhou, 2017). This following sub-sections present the literature related to the classification of music games in terms of traditional music games, electronic music games and cultural music games.

2.5.1 Traditional Music Games

Different scholars have classified the types of music games according to different criteria. In summary, there are five main classifications:

1. The number of participants: Music games can be classified as individual games and group games (Zou, 2021).

2. Teaching content: Zou (2021) classified music games into six categories based on different teaching content, including: 1) intonation exercises, 2) music knowledge exercises, 3) rhythm exercises, 4) musicianship exercises, 5) coordination exercises and 6) other games (games used in the introductory part of the lesson).

3. Form of expression: Music games include four categories which differ in presentation: imitative play (students play the game only by imitating the teacher), creative play (students create new games on their own without guidance from the teacher), active play (games based on themes) (Liu et al., 2013), and performance play (performance games focus on acting and therefore contain a storyline with more theatrical elements in presentation) (Wu, 2007).

4. Rules: Music game mainly includes games with and without rules. Ruled forms of musical games are often part of the music education lessons (Littleton, 2001).

5. Game elements: Music games are classified into those that use a separate and complete game (with a game theme and game rules) and those that retain only a simple gamification feature (only the form of a game, without a separate theme and rules) (Wang, 2021).

In terms of the level of detail in the classification of games, Zou's (2021) classification of music games according to the content of the teaching and learning is comparatively more comprehensive and include the other four types of classifications; This is

followed by classified according to the form of expression (Wu, 2007). Classification according to the number of people (Zou, 2021), rules (Littleton, 2001) and elements of the game (Wang, 2021) are more general.

In summary, many types of traditional music games are easy to organise (Mei, 2021), and many scholars have categorised traditional music games on a theoretical level to provide a clearer indication of which types of games can be used in certain situations to achieve better classroom results and meet the teaching objectives most effectively. However, the variety of traditional music games is also a test of teachers' ability to use them to organise their teaching. Understanding the issues associated with games and solving problems through repeated exploration and practise is essential towards effective use of music games for teaching and learning (Yu, 2015).

2.5.2 Online Music Games

With the widespread use of electronic devices such as mobile phones and computers, music game apps have been developed for educational purposes. When children tap on the interface of the game, they make sounds, for example, tapping on the "C" key makes the piano sound the pitch and tapping on the dog icon produces a barking sound with a display of the word "dog". Another example, when players click on the pictures of time (sun, moon, day, night) and animals (sheep, dog, cat, cow), different sounds and music will be played, combining visual with auditory music learning. The changing of the original black and white colours of the piano to the seven colours of the rainbow makes the game more attractive. In addition to the video game interface and interactive set-up, the next difficulty level of songs can be unlocked by completing game tasks. The main way to complete the tasks is to follow the prompts to play the

correct melody on the piano keys on the interface, and once the child has completed the task, he or she can move on to the next level of the game.

An in-depth study of the music game application "Pianinas linksmieji garsai" by Raziūnaitė and Miliūnaitė (2018) found that the game software promotes children's mastery of numbers, colours and music, that the brightly coloured interface and tasks maximise children's interest in the game. Due to its simplicity, younger children can understand how to play the game independently making it possible for children to receive music education at home.

2.5.3 Cultural Music Games

Lew and Patricia (2005) found that children around the world have unique musical games that are part of their family, neighbourhood, regional and/or ethnic culture. The psychological motivations for children to engage in musical play are similar which is to gain pleasure and satisfaction through musical play, but their games differ in nature, music, and form of play, which makes cultural play more unique (Wu et al., 2022). Some musical games for children include folkloric singing games; and games that are randomly compiled or adapted. For example, the Ghanaian game of "Obwisana" is adapted from the Ghanaian folk song "Obwisana Goin' to Ghana"; in the game, the children sit in a circle with stones in their hands of which they then pass around by singing and tapping the rhythm of the music using the stones in their hands on the ground to music (Chai, 2019).

In music classrooms, cultural games are usually played with traditional music such as folk opera music, rice-planting dances, waist drums (Hou, 2024). Since children have

yet to developa strong rational thinking ability, integrating figurative, interesting and life-like folk music resources into music classroom teaching can mobilise children's enthusiasm for learning and enable them to reap good music learning results (Liang, 2021). The use of cultural games can serve as a correlation between disciplines (Zhang, 2024). For example, the joint teaching of music and literature leads students to learn about ethnic music, history, culture, life and other aspects. Moreover, music and art can be taught in a joint way, and students are guided to be creative and draw by listening to music. The integration of different disciplines can effectively enhance the artistic and cultural qualities of primary school students towards achieving the educational goal of transmitting ethnic music and culture.

At the same time, musical games are also a way of spreading local culture (Marques et al., 2023), such as the bamboo pole dance of Hainan, China (Chai, 2019). Also known as "firewood jumping", it is a game in which several people hold bamboo poles and beat them rhythmically while the rest of the group jumps between the gaps in the poles along with the playback of recorded native songs. Originally an ancient ritual of the Li people, the bamboo dance has evolved into a cultural and recreational activity (Lin, 2008).

Lew and Patricia (2005) argue that if play is a factor of the culture in which children are raised, then teachers, parents and administrators need to be knowledgeable of games as an important transmission process. As adults responsible for the education of the younger generation, teachers may challenge themselves to find creative ways to incorporate children's musical spontaneity into the classroom, observing and listening

to children whose musical interests, talents, and knowledge are expressed in their laughter, interactions in games, as well as their solitary playing.

2.6 Music Games in Existing Music Pedagogy

The use of gamification is also reflected in some well-known music pedagogies. This section focuses on the integration of the use of music games in the Orff, Kodály and Dalcroze pedagogies, taking into account relevant research by scholars.

2.6.1 Music Games in Orff Method

The Orff method of teaching music was founded by Carl Orff (1895–1982) in Germany in the early 1920s. Its educational philosophies are:

1. Originality. There are no fixed teaching objectives or content, and most of them are taught in an improvised manner. The focus on students' participation in the classroom and the development of students' interest in learning (Li et al., 2010) is an educational concept that also falls under the quality of games (Mei, 2021).

2. Creativity. The classroom respects the children's true reflections, recognises their individual differences, and allows them to create their own arrangements and choose the instruments that suit them. The results are based on the children's inner musical instincts, which may seem chaotic but are real (Zhang, 2020).

3. Synthesis. Orff (1963) believed that music was originally never music in isolation, but rather a unity formed with movement, dance and speech. Music teaching often begins with language, combining rhythm with physicality to discover the musical talent that exists in human nature.

A summary of several scholars' research on the content of the Orff teaching method, which includes language combined with teaching, movement combined with teaching, and Orff instruments combined with listening training:

1. Joint Language Teaching: The teacher uses familiar names, words, children's songs and poems, or creates phrases with the students to practise simple rhythms, develop their sense of rhythm, and exercise their expressive language skills and creativity while feeling the music (Ren, 2021). In China, teachers commonly use language content that includes literature such as the "Tang Poems" [唐诗], the "Three Character Classic" [三字经] and the "Mulan Dictionaries" [木兰辞] as well as local dialects and nursery rhymes such as "Ice Candy Gourd" [冰糖葫芦].

2. Movement Integration Teaching: Orff instruction incorporates movement. It begins with running and jumping, and progresses to verbal gestures such as clapping and stamping the feet. This is typically taught in conjunction with dance routines such as pas de deux and the "Yangko" [秧歌] (Zhang, 2020).

3. Orff Instruments: Orff instruments are generally percussion instruments like triangles, wooden fish, scattered rattles like sand hammers, and leather drums (Wang, 2021), as well as local instruments from various nations and places like the Chinese gong and the "Kuaiban" [快板].

4. Aural training: Orff's auditory training scientifically guides children's discernment and perception.

From the educational and pedagogical philosophy of the Orff method, whether it is warming up before a music lesson or conducting rhythm training, teachers can start with musical games rather than training. Many of the lessons in the book *Orff's Ideas and practices in Music Education* are based on experiencing music through games, for example, "The Familiar Body Parts Game", "The Puppet Game", "The Space Walking Game", "The Newspaper Game" and "The Bean and Vine Game". Orff's emphasis on

music education includes teaching musical experiences that incorporate physical rhythms and feelings, as the purpose of musical theatre is to immerse students in a profound experience of exploring their feelings through movement.

2.6.2 Music Games in Kodály Method

The Kodály Method was founded by the famous 20th-century Hungarian composer and music educator Kodály Zoltan (1882–1967), and its main educational tools include movable doh, rhythmic reading, alphabetic notation and Colvin gestures (Han, 2020). Integrating the research of several scholars, Kodály's main educational ideas are music education for all, ethnic music education and early music education:

1. Music education for all: Kodály believes that music belongs to everyone and that the study of music contributes to people's physical and mental health, enriches the inner world, develops musical aesthetics and enriches the personality (Lu, 2019).

2. Ethnic music education: Kodály discovered the ability of folk music to be included in music education in exerting a creative influence, which affirms national identity and maintains the transmission of national culture (Schaub, 1954). He also pointed out the importance of featuring folk children's songs and classical ballads in song selection; retaining the mother-tongue mode of teaching; and adding singing games to develop children's ethnicity, collective concepts and musical interests (Han, 2020). Chinese music teachers therefore often combine the Kodály method with traditional Chinese stories such as "The Seven Fairies" [七仙女] and "Huluwa" [葫芦娃] (Ye, 2021).

3. Early music education: Kodály focuses on sight singing in music from early primary grades and often incorporates drawing, gestures and games to fully

engage children's multiple senses to deepen their interest and understanding of music (Han, 2020).

There is also a strong emphasis on musical play in the Kodály method of teaching music. In addition, Kodály has a strong focus on singing in the music classroom, and the book *Kodály Today* (Micheal & Philip, 2015) is specifically designed for teaching singing and various ways of conducting musical games such as circle games, straight-line games, pairs games and big wind games.

2.6.3 Music Games in Dalcroze System

The Dalcroze method was founded by the Swedish musician, composer and music educator Émile Jaques-Dalcroze (1865–1950) in the late 19th century (Cheng, 2021). The Dalcroze method is based on movement and musical reflection (Zhang, 2020). It was introduced in China in 1982 by Virginia Mead, a professor of music education and somatic movement at The Ohio State University (Shi, 2020).

The Dalcroze method has three main elements (Dalcroze, 1913):

1. Eurhythmics: teaching the concept, structure of rhythm and musical expression through movements.
2. Solfège: a learning method that allows musicians to sing out loud the first time they hear or see a pitch.
3. Improvisation: responding to stimuli from the surrounding environment and internal feelings.

In the book, *Dalcroze's Theory and Practice of Music Education*, somatic rhythms are seen as a playful teaching practice (Yang & Cai, 2011), a way and method for children to learn expressive music and to evoke their musical imagination. Body rhythm is the use of the body as a musical instrument to perceive rhythm, melody and other musical elements of a song. The rhythm is introduced naturally into the classroom through games, allowing the children to enter the world of music (Chen, 2008).

2.6.4 Summary of Orff, Kodály and Dalcroze Pedagogies

Although all the three pedagogies are well-established and systematic, there are differences in the presentation of content. In terms of the presentation of the content of the pedagogy, the content of the Orff method is presented in the five volumes of the textbook "Orff-Schulwerck" (Orff, 1950–1954), rather than a clear display of the content of the pedagogy in a separate document as is the case with the Dalcroze and Kodály method (Yu, 2018). In contrast, for the current stage of primary school music teaching in China, teachers can combine the characteristics of the three pedagogies. On the localisation of the three music teaching methods, Han (2016) argues that educational subjects need to develop the corresponding teaching materials, teaching methods and teaching tools based on their national conditions, local characteristics and children's physiological and psychological developmental characteristics, so they can combine the three educational ideas of Dalcroze's rhythmicality, Orff's originality and Kodály's ethnicity to conduct teaching activities.

2.7 Music Teacher Professional Development

The professional development level of music teachers can directly affect the quality of music education. Professional development of music teachers can be divided into pre-service and in-service. Pre-service refers to teachers who have been teaching for about 1 to 3 years, they are usually in the adaptation stage and need to achieve professional growth and development in a variety of ways to adapt to their positions (Zhong,2023). In-service teachers refer to those who have certain teaching experience and have fully adapted to the teacher's position (Ministry of Education Teacher Work Division, 2022).

2.7.1 Pre-service Development

The primary concern of teachers at the pre-service stage is mainly about their sense of personal adequacy. At this stage, pre-service teachers are aware of their transition from student to teacher. This stage is characterised by concerns about being liked by students, receiving good evaluations from others, and being competent to teach (Miksza & Berg, 2013).

Ballantyne's (2006) study of early career music teachers' perceptions of pre-service teacher education programs summarised 3 important themes of production: the need for contextualisation, integration and continuity of pre-service music teacher education programs. First, contextualisation refers to training that provides teachers with contexts that match the realities of the classroom, applying knowledge and skills learned in various disciplines to the context of their future as music teachers. Secondly, early career music teachers believe that integration is at the heart of an effective music teacher education programme. This is defined as integrating to help teachers make

connections between theory and practice, general education and music education. Finally, continuity is defined as the continual use of skills trained through contextualisation and constantly applying educational theory in real work situations (classrooms).

2.7.2 In-Service Development

Attaching importance to the professional development of music teachers and enabling students to learn through the latest educational concepts are necessary condition to promote the formation of students' musical literacy and the development of art education. The professional development of music teachers relies mainly on the teaching and research groups formed by music teachers in schools. Regular learning activities such as lesson planning groups, lesson evaluation and thematic teaching and research allow teachers to learn from each other in the process of knowledge exchange (Lu, 2024).

The learning activities can be divided into two main components: online workshop and face-to-face learning. Teachers receive guidance from experts online and solve problems on musicology skills in face-to-face learning (Liang, 2023). Learning resources include both online resources and offline resources, such as materials on curriculum, competition, theory and teaching reflection.

In addition, teachers can also improve teaching efficiency through network and television resources, but they will need to continue to learn and apply to music teaching practice in order to effectively improve the effect of music teaching (Li & Dong, 2022). For example, The Voice of China can be used as reference to music

teaching practice by analysing the current popular music trend and understand the performance of music and instrumental music, so as to better develop students' music potential.

In primary school music teaching, due to various reasons, the development of music teachers has not been effectively improved, making it difficult to teach music professionally in the classroom. This situation restricts the improvement of students' music literacy (Lu, 2024). Therefore, it is necessary for primary school music teachers to understand the focus of professional development and take the initiative to improve their teaching skills.

2.8 Challenges Faced by Music Teachers

Teachers face different challenges and difficulties when using gamification in teaching music. This is mainly reflected in the lack of training opportunities for teachers, inadequate professional teaching facilities, low enthusiasm in students and insufficient attention to music education.

2.8.1 Lack of Training Opportunities

Zou (2020) found that some teachers were willing to use gamification in their teaching process, but limited by insufficient professional teaching skills and lack of training opportunities. They often chose to use traditional teaching methods and incapable of designing the learning content that incorporates the interests and needs of their students. Some schools organise training for teachers in the form of lectures; however, the content of the training is mainly theoretical and lacks professional music skills training. Most of the training content is generally similar and does not separate

teachers from different subjects, and teachers were unable to improve their professional skills through attending the same training (Liu, 2021).

Both students and teachers need to enrich their knowledge and skills through continuous learning. In music education, flexibility in different teaching methods by taking into account the different contents of the curriculum (Han, 2020) as well as the learning characteristics of different students (Niland, 2009) can ensure that every student can participate in the game and gain a sense of pleasure and experience in learning.

2.8.2 Inadequate Professional Teaching Facilities

Inadequate music equipment in schools can directly affect the effectiveness of teachers' curricula. The lack of accompaniment instruments that are usually used in primary music education such as piano, guitar and accordion makes teachers dependent on the media player (Huang, 2021). The lack of specialised music classrooms equipped with accompanying instruments and insufficient space for activities limits the choice of types of games available to teachers and limits the engagement in students (Chen, 2019). Some schools have music rooms and electronic piano rooms, but they do not support teachers in their daily educational activities and are limited for use during visits by supervisors or for competitions (Xiong, 2020).

2.8.3 Low Enthusiasm in Students

The effectiveness of teaching music games is linked to the level of cooperation among students. Due to the nature of games, students may become overexcited and have difficulty ending the music games (Cai, 2018). As young children have yet to have

extensive exposure to arts (Wang, 2021), this leads to differences in individual students' musical literacy (Li, 2021). This, coupled with the fact that the games used by the teachers are homogeneous or not preferable by the students, making the students less motivated and less interested in the content of the lessons (Ren, 2021) and thus affecting the teachers' delivery of music education. As primary school students are easily attracted by lively and interesting forms, teachers can reduce the proportion of theoretical lectures and add interesting content so that students' attention is fully engaged, and they can learn more about music and singing skills in the classroom (Guo, 2021).

2.8.4 Insufficient Attention to Music Education

There is a disconnection between educational philosophy and educational practise in China with most schools still prioritising academic performance (Huang, 2021) and focusing more on primary school students' learning and examination results in the main subjects such as language, mathematics and English at the expense of music, art and physical education (Ren, 2021). A common phenomenon is that towards the end of the term, other teachers take over the music class to teach their own subjects (Xiong, 2020) and this leads to some music teachers becoming inert and unmotivated to teach (Ren, 2021). Due to the reduced length of music lessons, some music teachers have had to resort to playing videos and audio to speed up the pace of instruction to complete their educational tasks (Li, 2021), which has also directly affected the quality of music lessons.

2.8.5 Lack of Parental Involvement

The improvement of primary school students' artistic literacy is a long-term and gradual process. The effective joint training of students with home cum school co-education can fully reflect the continuity, persistence and permeability of music education. It plays a very important role in stimulating students' enthusiasm and improving students' music learning ability (Gao, 2024). Evidence showed that parents who are actively involved in their children's education may improve their academic performance (Deslandes & Bertrand, 2005), and this correlation implies that fostering a collaborative partnership between the educational institution and the parents has the potential to greatly increase the effectiveness of gamified education (Alqudah et al., 2024). Most of the students view their home life separately from their school life. Co-operation between home and school opens the communication which helps the teachers to obtain sufficient information from the parents about the students (Fu, 2024).

Nonetheless, music games are deemed entertaining and parents often do not support their students' games for various reasons. Some parents who do not have a high level of musical literacy do not view the importance of their children's music learning (Fu, 2024). The change of mindset and attitude among parents requires time and awareness to accept the concept of education in the game (Liu, 2024), of which this effort made by teachers also increases their workload.

2.9 Summary of Literature Review

Initially, teachers only spontaneously used local children's songs in the music classroom, and the method of music teaching was dominated by the traditional singing demonstration method. It was not until the 1980s that the Orff, Kodály and Dalcroze

pedagogies were introduced and used, and the variety of music pedagogies was gradually enriched. Beginning with the use of games from the Western pedagogy, they were gradually integrated with indigenous Chinese culture, traditional instrumental music and traditional music, before moving away from the pedagogy to integrate gamified teaching into the general music classroom. From the research of many scholars and the attention of the Chinese Education Bureau, gamification has gradually become one of the teaching methods in music education, and music games include different classifications: traditional music games, electronic music games and cultural music games.

There is much discussion on the advantages of gamification teaching in music, including its ability to enhance students' learning experiences and develop social and emotional skills. Regarding the professional development of music teachers which includes pre-service professional learning as well as in-service offline and online training, the teachers' professionalism has not been effectively enhanced. The current study also points to five challenges faced by teachers in the implementation of teaching and learning: lack of training in gamification, lack of professional facilities for teaching music, non-cooperation of students in the classroom, lack of attention to music education and lack of parental involvement. However, there is little mention of the negative impacts of gamified teaching in its implementation, as well as a lack of research on other challenges that teachers may face when using gamified teaching. In addition to this, there is little information on the external factors affecting teachers' use of gamification, such as the requirements of the school's teaching schedule.

Therefore, based on the literature review, there is a need to investigate the implementation of gamified teaching on both the positive and negative impacts as well as factors that affects the use of gamified teaching. There is also a need of recommendations for the ways to solve the difficulties when using gamified teaching and improve its effectiveness.

CHAPTER 3

METHODOLOGY

3.1 Concepts of Games and Gamification

There are many commonalities and some differences in the form, content and purpose of "gamification", "game" and "play". In Letters Upon the Aesthetic Education of Man, Schiller (1795) argues that play is a way for children to expend their excess energy and is an instinctive human choice. According to the educationalist Vygotsky (2010), play creates the "zone of proximal development" where children have the potential to go beyond their current level of competence and further improve their abilities.

The French sociologists Caillois and Arash (2001) distinguish between play and game through two Latin words "*paidia*" and "*ludus*" respectively, which represent two different types of activity: "play" is a free, unregulated and highly expressive act whilst "game" refers to rule-based play with the aim of achieving a goal. In addition, McGonigal (2011) summarises the four essential characteristics that a game must have:

1. Objectives: with clear goals for the game;
2. Rules: uniform and detailed rules;
3. Feedback: clarifying the rules of the game, ensuring the accessibility of the game objectives and giving feedback to the players; and
4. Voluntary: players are free to participate in the game and follow the rules of the game.

The term "gamification" was coined by Nick Pelling in 2002. At the 16th International Academic Mindtrek Conference, Huotari and Hamari (2012) defined gamification as a long-term process of enhancing learning by providing motivation to stimulate the user's gaming experience and sense of achievement. The well-established definition by Deterding et al. (2011) refers "gamification" as the use of game design elements in a non-game environment such as education. In gamification, only certain game elements are included in education according to the needs and intentions of the use (Engedal, 2015). The advantages of play are used in education to encourage problem-solving and enhance learning experiences through positive emotions, and avoid distractions and over-reliance on the teacher in learning. Qiu (2011) points out that there are four levels in the use of games in education:

1. First level: Games are part of a recreational activity. Games are utilised to ease stress, indicating their exclusive recreational role and having no link to learning.

2. Second level: Games are educational tools and are used to conceal education. The instructional information is given in the style of a game, but the content itself does not attract the students' attention, and they do not gain the experience of playing as a result. Such exercises simply pique students' interest for a short time and do not keep them engaged in the task.

3. Third level: Games are a way to demonstrate emotional and social maturity. At this level, teachers provide simple games and materials for students to initially develop socialisation, but the level of materials and content, transitions and opportunities for role play are low.

4. Fourth level: The game is an activity that is integrated into the overall development of the students. The teacher and students interact frequently during the process. The teacher joins the game rather than acting as a third-party observer; always pays attention to the students' interests and feelings; participates in the activity together with the students; offers some views that

differ from the students' views, helping the students to broaden their ideas; and guides them to be able to explore and discover more deeply. The games are of a high standard when they are organically integrated with the content of the activity, maintaining their specific nature and at the same time allowing their educational value to be expressed through a balance of appropriateness and effectiveness.

In summary, the common denominator between "gamification" and "game" is that they are both play-based activities that are fun and positive. At the same time, both "gamification" and "game" can develop students' teamwork skills and promote the development of their imagination and creativity.

The difference is that "play" is a recreational activity with the main purpose of relaxation, and that "game" consists of games with rules and games without rules that are freer and less regulated (Qiu, 2001). "Gamification" in education is a form of play, but it is still essentially a musical activity and is carried out for educational purposes. The games used in "gamification" are more structured, with rules governing them and guidance for the students to participate. Combining the above definitions of gamification and the views of some scholars, the relationship diagram is summarised in Figure 3.1.

Figure 3.1 : The Relationship between Proximal Development in "Play", "Game" and "Gamification"
(Source: Qiu, 2001; Qiu, 2011; Sun, 2017; Vygotsky, 2010; Yao, 2020).

3.2 Conceptual Framework

The purpose of this study is to investigate the use of gamification in music classroom in relation to the current content of primary school music education in Beijing, as well as to examine the factors that influence teachers' use of gamification methods. The data collection methods for this study are lesson observations and interviews that focus on teachers' experiences in the teaching and learning process, and the study is

designed to investigate in-depth the issue of how and why gamifications are implemented in music classrooms.

Firstly, a conceptual definition of gamification teaching in this study was developed in conjunction with Deterding et al. (2011) and Song (2020); secondly, the games collected were categorised and organised with reference to Zou's (2021) classification of music games; and finally the concepts in "flow" theory (Csikszentmihalyi, 1990) were used to evaluate whether teachers were using gamified instruction effectively in their teaching to achieve the effect of helping students learn and assisting teachers in their teaching (Figure 3.2).

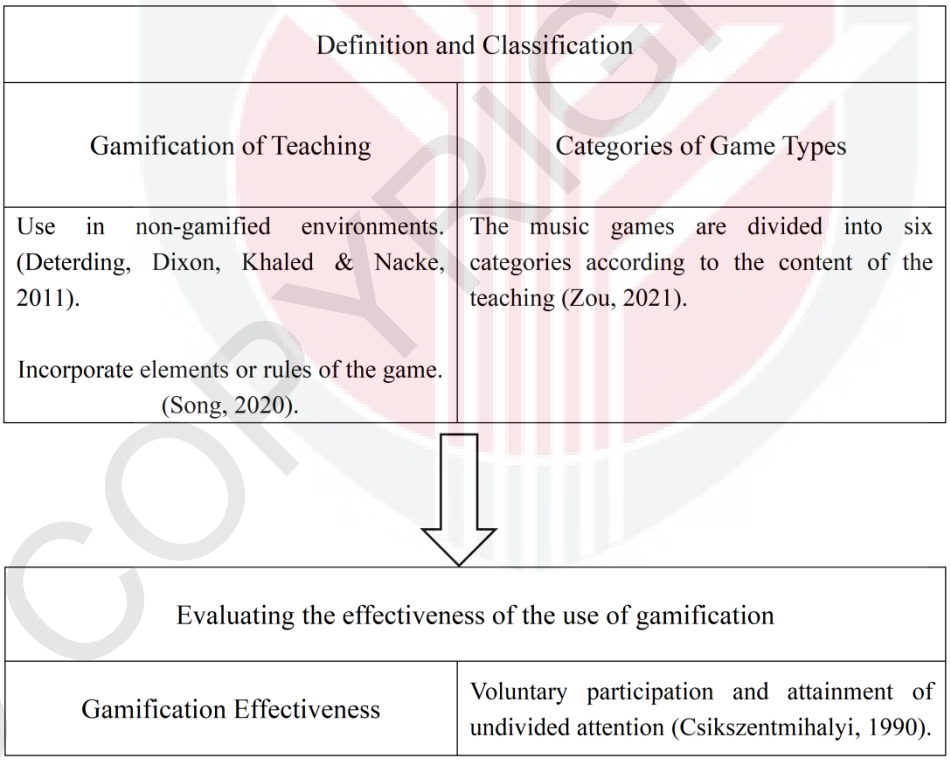

Figure 3.2 : Conceptual Framework of the Study That Includes Music Gamification Teaching (Deterding et al., 2011; Song, 2020), **Classification of Music Games** (Zou, 2021**) and "Flow" Theory** (Csikszentmihalyi, 1990)

The concepts for music gamification teaching combine Deterding et al. (2011) definition of gamification as the use of game design elements in a non-game environment and Song's (2020) definition of gamification teaching, which is a process of teaching and learning that incorporates elements or methods of play, allowing students to try out the game and draw patterns and answers. Music gamification teaching in this study refers to the integration of educational content with games in the music classroom, where teachers develop and guide students through music education activities in the form of games or using game elements while allowing students to acquire the knowledge and skills they need while playing. Games that do not have an educational purpose, for example, saying a riddle to help students stay awake, are not considered gamification in this study and were not recorded as target content if they occur in observations.

Regarding the classification of music games, this study incorporates two of Zou's (2021) ideas for classifying games according to the number of participants in the music activity. Music games can be classified as individual games and group games. For the content of teaching, music games can be divided into six main categories: pitch practice, music theory practice, rhythm practice, musicianship practice, coordination practice and other miscellaneous games. The observed musical games are first categorised according to the number of participants and then sub-categorised according to the content of the teaching.Csikszentmihalyi (1934–2021), a psychologist at the University of Chicago, introduced the concept of "Flow" in the mid-1970s. "Flow" (Csikszentmihalyi, 1990) refers to a feeling or state of being fully engaged in a voluntary activity, using one's strengths and talents, and being completely immersed in it, achieving a state of undivided attention. Gamification can help students attain a

state of “Flow”, especially when the difficulty of the task is suited to their skill level (Huang et al., 2019). This suggests that the “Flow” state induced by gamification is a comfortable state of learning that is more conducive to helping learners gain experience and knowledge, and increase learning efficiency. The teacher’s use of gamification in the session were evaluated by observing the students’ state of engagement with the content during the gamification session whether they are able to participate in the game activities, interact with the teacher, or be distracted.

According to Creswell (2014), the use of theory in a qualitative study is as an explanation or definition of behaviour by collecting detailed information from subjects such as personal experiences. Unlike quantitative research’s use of theory, the study does not test the theory. The framework of the study uses “flow” theory (Csikszentmihalyi, 1990) as well as the concepts of gamification (Deterding et al., 2011) and gamification teaching (Song 2020) and music game classification (Zou, 2021). These theories are used to help define the concepts in the study and assist in data analysis.

3.3 Research Design

This study aims to investigate the use of gamification teaching in music lessons in a public primary school in Beijing. This study is a qualitative study with a single instrumental case study (Creswell, 2007) as the main research method, specifically using observational and interview methods.

A case study is a qualitative approach in which the researcher explores a case or cases through detailed, in-depth data collection from multiple sources of information, such

as observations, interviews, audiovisual material, documents and reports, over the same period, and reports on case descriptions and case-based themes (Creswell, 2007). For example, several projects may be chosen for a multi-site study or a single project within a single site to be studied (Creswell, 2007). This qualitative research is exploratory in nature to describe research questions (Creswell, 2014) and enrich descriptions of the phenomena (Sofaer, 1999). A single instrumental case study can be used to examine a single bounded case when the researcher is focused on a single issue or concern (Stake, 1995).

The research method includes classroom observations, audiovisual recordings, photograph takings and interviews. Music classroom observations were conducted in one class each of Year 1–3 in one school to observe and record the teachers' teaching process, the content of the games used, the number of teacher-student interactions and student distractions. Three teachers were interviewed separately during the last week of data collection in order to gather teachers' opinions and ideas about the content of the study.

3.3.1 Research Site

The location of this research is in Beijing, China. The public primary school, Beijing Shijingshan No. 2 Experimental Primary School, was selected as the study site. This school was chosen for several reasons. Firstly, it has been established for 18 years and is a public primary school with rich teaching experience. Secondly, the three music teachers at the school were in different age groups: a retiring veteran teacher, a middle-aged teacher with 20 years of teaching experience, and a young teacher with only three years of experience. Hence, the lesson observations and interviews were able to

capture the perceptions and the use of gamification teaching by teachers of different ages and teaching experiences. This research includes continuous collection of relevant data and in-depth analysis corresponding to the research objectives, therefore only one school with a total of 47 lessons provides a sufficient amount of data for the study.

3.3.2 Research Participants

Creswell (2014) states that purposefully selecting participants or locations will best help qualitative researchers understand the problem and research question. This study used purposive sampling method, and to satisfy the following requirements according to the research questions and objectives of the study, combined with the inclusion and exclusion criteria: 1. three classes taught by three music teachers with more than 2 years of teaching experience respectively, and 2. the number of aged 7–10 students in the three classes is the same, which makes the sampling of the subjects of the study more suitable for this study. The participants of this study are primary school students of Year 1–3 and all music teachers of the No. 2 Experimental Primary School in Shijingshan District, Beijing, a total of three. The size of each class is approximately 30 students. One class from each grade 1 to 3 were selected for this study with 90 students in total. Music teachers from each grade were selected: Teacher A of Year 1, Teacher B of Year 2, and Teacher C of Year 3.

Three teachers were selected for the study because there are only three music teachers in this school. Although the number of teachers is small, this study collected 47 music lesson observation records of 40 minutes each; and three teacher interview records

with an average interview time of one hour per teacher. The personal information of the three teachers is shown in the table (Table 3.1).

Table 3.1 : The Personal Information form of the Three Teachers

Teacher	Diploma	Graduated Major	Length of Time As a Music Teacher
Teacher A	College degree	Music Education	32 Years
Teacher B	Bachelor's degree	Dance	25 Years
Teacher C	Bachelor's degree	Vocal Music	6 Years

The inclusion and exclusion criteria for the participants of this study are:

Teacher Inclusion Criteria:

1. Currently working at the No. 2 Experimental Primary School in Shijingshan District, Beijing.
2. Understand music gamification methods and have at least two years of experience in teaching music.
3. Using gamification in each lesson.

Teacher Exclusion Criteria:

1. Not working in the primary school under study.
2. Unaware of gamification teaching.
3. Do not use gamification in teaching.

Student Inclusion Criteria：

1. Students of No. 2 Experimental Primary School in Shijingshan District, Beijing.
2. Years 1–3 aged 7–10 taught by the teachers involved in the study.

3. The number of students in the three classes is the same.

Student Exclusion Criteria:

1. Students who are not taught by the teacher under study.
2. Students aged below 7 or above 10.

3.3.3 Data Collection Procedure

The data for this study were collected for 2 months from March 2022 to April 2022, and the data collection procedure included three phases (Figure 3.3).

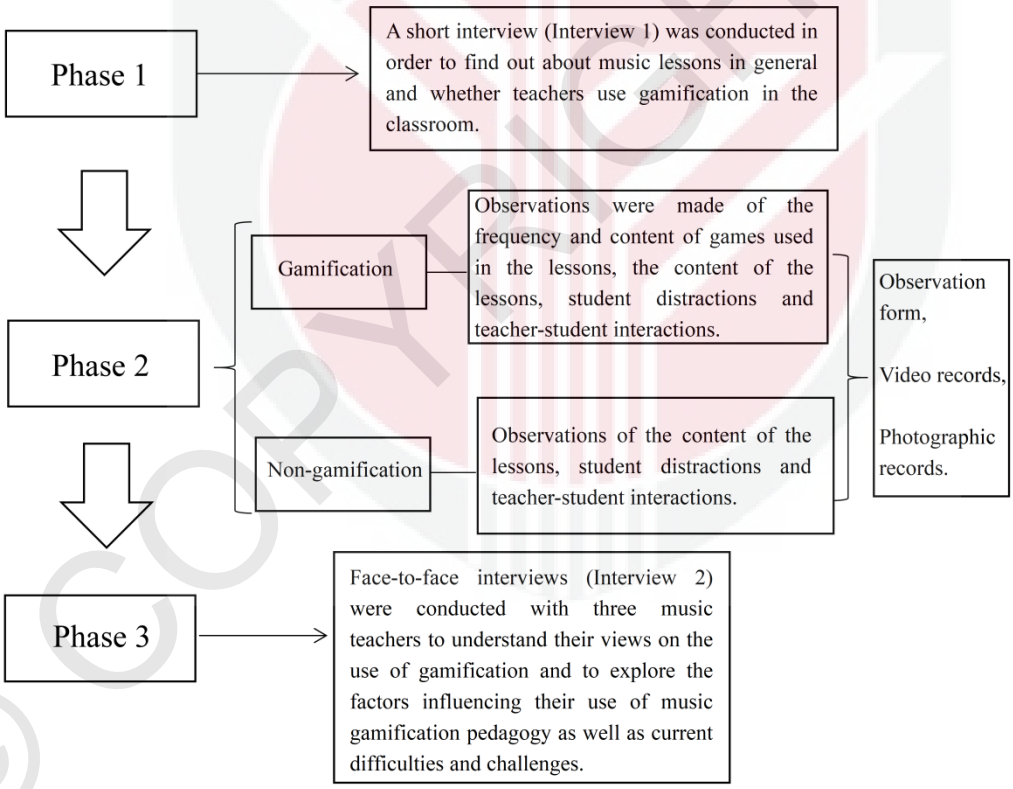

Figure 3.3 : Data Collection Process in the Study of Gamification in Beijing Primary School Music Education

The sequence of data collection for this study was:

Phase 1: A short interview (Interview 1) (see Section 3.3.4.1) was conducted with teachers using Interview Question 1 to collected about music lessons in general and whether teachers use gamification in their classrooms.

Phase 2: Using a lesson observation form (see Section 3.3.4.2) collected data, the observation on the use of gamification (if any) in terms of frequency of games, content of games, student participation, lesson content and student distractions. Observations involve one of the classes taught by three music teachers in year 1–3 for two months, and the current stage of application of gamification teaching in the selected school was described through the content of the lessons, the teachers' pedagogical design and the teaching methods applied. Observations were made to record students' behaviour in classrooms with/without game-based teaching, for example, interactions with teachers, to investigate whether gamification teaching has a positive or negative effect on students' learning of music. Observation checks are recorded in real-time using a lesson observation form while the whole lesson is videotaped. If tools are used in the play activities, the tools are photographed and recorded.

Phase 3: Face-to-face interviews (Interview 2) (see Section 3.3.4.3) were conducted with three music teachers using Interview Question 2 to find out their perceptions on the use of gamification and to explore the factors affecting their use of gamification pedagogy in music as well as their current difficulties and challenges.

3.3.4 Research Instruments

The instruments used in this study were two sets of interview questions (Interview 1 and Interview 2) and course observation form to explore the specifics of teaching and present use of gamified instruction in primary school music in Beijing; students' distracting behaviours and the number of times teachers maintained order; the factors influencing teachers' use of gamification teaching methods and the challenges faced by the teachers.

3.3.4.1 Interview 1

Interview 1 is a structured interview, with each interview lasting five minutes before the lesson to gain an initial understanding of the content and teaching methods used by the teacher before the lesson and as a basis for data collection for classroom observation (Figure 3.4).

Time of Interview:
Date:
Place:
Interviewee:
Questions:
1. What is the title of your lesson?
2. Which class are you in?
3. Do you plan to use gamification in this lesson?
4. (If yes from Question 3) Which part of the lesson will be taught using gamification?

Figure 3.4 : Interview Questions for Interview I with Teachers before Lessons

3.3.4.2 Classroom Observation Form

The music curriculum at the school sets two lessons per week for each class in Year 1 to 3. Lesson observations were conducted over an 8-week period, with 2 lessons per week, with a total of 47 lessons of 40 minutes each and an overall total of 31 hours and 20 minutes. Creswell (2014), in a review of many qualitative studies, found that a case study is is a design of inquiry found in many fields. Researchers analyse a case in depth, usually a procedure, event, activity, process, or one or more individuals. Detailed information is collected over a sustained period of time using a variety of data collection procedures. The lesson observation form is referenced from the lesson observation form in Yao's (2020) paper, with modifications and additions based on the research objectives of this research (Figure 3.5). The lesson observation form is designed to record the observation of the content of the music curriculum and the content of the games used by the teacher to study the current state of gamification of music teaching in primary schools. The number of teacher-student interactions, number of student distractions, and number of times the instructor maintains discipline in the classroom with or without gamified teaching were used to examine the positive and negative effects of gamification on students (Zhang, 2014; Luo, 2021).

Music Classroom Observation Form		
Date of observation	Teacher's name	Observation Classes
Number of students	Whether to use gamification	Number of games
Teaching Content		
Gamification of teaching content	Game 1	Game 2
	Game 3	Game 4
Remarks		
Number of times teachers maintain classroom discipline ( )		
No gamification sessions ( ) times	Gamification sessions ( ) times	
Number of teacher-student interactions	Number of student distractions	
Teacher gives instructions ( ) times Students responded ( ) times	Number of distracted people ( ) Total number of distractions ( )	
Note 1: Teacher-student interaction means that the teacher gives instructions and the students act or respond accordingly, for example by asking and answering questions. Note 2: Distracted behaviour is defined as a student engaging in behaviour that is inconsistent with the teacher's instructions or unrelated to the classroom, such as gawking. Distracting behaviour by the same student are recorded as N instances.		

Figure 3.5 : Primary School Music Classroom Observation Record Form

3.3.4.3 Interview 2

Interview 2 employed semi-structured interview questions to collect teachers' perceptions of gamified teaching and learning based on their attitudes and the challenges they face (Figure 3.6). The interview questions were developed according to the objectives of this study and with reference to Zhou (2017) and Sun (2017).

Time of Interview:
Date:
Place:
Interviewee:

1. What do you know about gamified teaching? How did you find out about it?
2. What is your definition of gamified teaching?
3. Do you think it is feasible to integrate games in the primary school music classroom? Why?
4. What do you know about the three music pedagogies Orff, Kodály and Dalcroze?
5. Do you use any of these three music pedagogies? Why?
6. How often do you use gamified teaching in your teaching process?
7. What do you think are the effects of using gamified teaching on the development of music teaching?
8. Where do you obtained the games for teaching? Are the games you use original, borrowed from other teachers or are they from the three music pedagogies?
9. What forms of music games do you play in your classroom?
10. What approaches do you incorporate into your game design?
11. Do students enjoy playing games in the classroom? How do you judge that?
12. In which lessons do you prefer to use the music game method?
13. What problems/difficulties have you encountered in using gamified teaching?
14. What do you think are the factors that influence your use of gamification in teaching?
15. What do you consider before using gamification for teaching?
16. Have you attended training on the gamification or the three music pedagogies?
17. How did you get your music teaching training?
18. Do you volunteer for training that is not organised by the school? Why?

Figure 3.6 : Interview Questions for Interview 2 on Teachers' Perceptions of Gamified Teaching

3.3.5 Research Ethics

Consent was sought from the students' parents and the school before conducting classroom observations through Information Sheet and Consent Form (Appendix C1 C2; Appendix D1 D2). The identities of the respondents are kept confidential and he/ she will not be able to be identified or identifiable in any written works or presentations. Any data collected are stored with relevant security. For photograhs, the faces were blurred to protect the subjects' privacy. To preserve the privacy of the instructors and pupils, consent is obtained from the classroom teacher before taking videos. The videos are only utilized as data for this study and are not shared with the public. Teachers are be addressed by name; their opinions were not guided; their personal thoughts are respected; and audio recordings were made with their

permission. This study project has received ethical approval from the Ethics Committee for Research Involving Human Subjects of University Putra Malaysia (JKEUPM) with the reference number JKEUPM-2022-892 (Appendix B).

3.3.6 Pilot Study

A pilot study was conducted through a trial lesson where the classroom observation form was used to test the instrument which includes:

1. Can the observations formulated in the observation form be observed and recorded in a real classroom?
2. Are there any other elements relevant to the research question that need to be added to the observation form?

The pilot lesson observation took place on 2 March, 2022 and the lesson was a singing lesson "Beautiful Twilight" [美丽的黄昏]. The lesson was taught using gamification: there were 3 games, 20 teacher-student interactions, 5 distractions among students and 2 times that the teacher maintained order in the classroom. When testing the classroom observation form, it was found that teacher behaviour in maintaining order in the classroom had not been included as part of the lesson observation in previous lesson observation designs, but the pilot lesson observation showed that this type of data was relevant to the content of this study and was therefore added to the lesson observation.

3.4 Materials and Data

Year 1 had a music lesson on Mondays and Wednesdays and observed lessons twice a week for a total of 16 collections; Year 2 had a music lesson on Tuesdays and Thursdays and observed lessons twice a week for a total of 15 collections due to public

holiday closures; Year 3 had a music lesson on Mondays and Wednesdays and observed lessons twice a week for a total of 16 collections (Table 3.2). Based on the hours and dates, 48 lesson observations should be collected for this study, but the number of lesson observations were affected by the public holidays in China on 3 April to 5 April 2022, with 4 April and 5 April being Mondays and Tuesdays; hence, the total number of lesson observations collected for this study is 47.

Table 3.2 : Course Observation Timetable of This Study

Course Observation March 7 to April 29, 2022 (8 weeks)			
Title	**Observation Time**	**Number of Observations**	**Total Number**
Year 1	Every Monday & Wednesday	2 times a week	16
Year 2	Every Tuesday & Thursday	2 times a week	15
Year 3	Every Monday & Wednesday	2 times a week	16
Total	/	6 times a week	47

The study collected 47 classroom observation forms for a total of 31 hours and 20 minutes of observation. Interviews 1 with teachers were conducted prior to each lesson observation and involved only a preliminary overview of the teacher's materials and teaching practices for each lesson. Interview 2 was conducted during the last week of the classroom observation period to collect three teachers' perceptions of gamified learning and teaching (Table 3.3). Interview 2 and lesson observations are the primary data collection in this study, and they involved teachers' perspectives on gamified learning in connection to the study's objectives.

Table 3.3 : Data on Observations and Interviews That Were Collected in This Study

Title	Number of Data Collections	Total Duration
Observation Form	Year 1: 16 Year 2: 15 Year 3: 16 Total:47	Year 1: 10h 40m Year 2: 10h Year 3: 10h 40m Total: 31h 20m
Interview 1	Teacher A: 16 Teacher B: 15 Teacher C: 16 Total: 47	Teacher A: 1h 20m Teacher B: 1h 15m Teacher C: 1h 20m Total: 3h 55m
Interview 2	3	4.5h

This study collected data over eight weeks, mostly through lesson observations and interviews to acquire pertinent research data. There were 47 class observation recordings gathered, including 32 for gamification teaching and 15 for non-gamification teaching. In Year 1, a total of 16 lesson observations were collected, with 11 on gamified teaching and 5 on non-gamified teaching; in Year 2, 15 lesson observations were collected, with 9 on gamified teaching and 6 on non-gamified teaching; and in Year 3, 16 lesson observations were collected, with 12 on gamified teaching and 4 on non-gamified teaching (Table 3.4).

Table 3.4 : The Amount of Data Collected and the Length of the Data Collection

Year & Class	Total Number of Course Observations	Number of Gamification	Number of Non-Gamification
Year 1 Class1	16	11	5
Year 2 Class1	15	9	6
Year 3 Class 3	16	12	4
Total number	47	32	15

3.5 Data Analysis Methods

This study used qualitative data analysis methods to analyse the results of the observations and interviews. The interviews were transcribed verbatim. The methods of analysis include graphical, comparative analysis (Kerry, 1998) and thematic analysis, as described below.

1. The categories and relationships between the various data collected through the Lesson Observation Form, Interview Question 1 and Interview Question 2 are visualised using graphs to present frequencies and percentages.

2. Comparative analysis (Kerry, 1998) refers to an argument about the relationship between two or more elements, with an emphasis on discovering subtle differences based on mostly similarities. It was used in this study to analyse data on teachers' use of gamification and non-gamification teaching during lesson observations. Comparative analyses were conducted in terms of students' distracting behaviours, teachers' maintenance of order, and teacher-student interactions.

3. The content and course observation data from Interview 2 were analysed using thematic analysis and research questions. The responses to the interview questions were grouped into 5 thematic categories: 1. perceptions of gamification teaching, 2. use of gamification in teaching, 3. gamification training, 4. challenges and factors influencing gamification of teaching, and 5. Orff, Kodály and Dalcroze music pedagogy. The data from the course observations were grouped into 3 thematic categories: 1. music course curriculum, 2. music teaching facilities, 3. music teaching content. The data collated above were analysed according to the research question.

Data were analysed using graphical and thematic analyses to answer research question 1: How are gamification used in the public primary school music courses? First, the data from the lesson observations, Interview 1 and Interview 2 were classified.

Secondly, the themes related to Question 1 were selected and the data were presented and analysed through graphs.

Data were analysed using graphical, thematic and comparative analyses to answer research question 2: What are the factors that influence the teachers to use gamified teaching in music classrooms? Firstly, thematic analysis was used to categorise the data from the lesson observation data and Interview 2. Secondly, the themes related to Question 2 were selected and the data on gamification teaching were compared with the data on non-gamification teaching through comparative analysis. Finally, the results of the analyses were presented using graphs.

Data were analysed using graphical, thematic and comparative analyses to answer research question 3: What are the challenges faced by the teachers in the implementation of gamification in music classrooms? Firstly, the data related to the lesson observation data and Interview 2 were analysed through thematic analysis, and secondly, through comparative analysis based on the content of the data. Finally, the data were presented using the graphical method.

CHAPTER 4

PRIMARY SCHOOL MUSIC CURRICULUM AND MUSIC GAMIFICATION TEACHING

4.1 Data Collation of Interviews and Lesson Observations

A total of 47 lesson observation forms (Appendix A) and three teacher interviews were collected during data collection. The data collected were categorised (Table 4.1, Table 4.2), the current situation of the primary school music curriculum, the current situation of gamification teaching and the factors and challenges affecting teachers' use of gamification teaching in Beijing Shijingshan No. 2 Experimental Primary School were analysed. The sections below in this chapter further explain the summary presented in the two tables.

Table 4.1 : Summary of Data from the Three Teachers' Interview 2 Transcripts

Data from Interview 2				
CATEGORY	**INTERVIEW QUESTIONS**		**INTERVIEWEE**	**SUMMARY OF CONTENT**
Perceptions of Gamification Teaching	1.	What is your definition of gamified teaching?	Teacher A	Incorporation of games into teaching, and learning while playing.
			Teacher B	Incorporation of teaching content into games, teaching by playing games.
			Teacher C	Integrating teaching content into games, engaging students actively in teaching.
	2.	Do you think it is feasible to integrate games in the primary school music classroom?	Teacher A	Feasible. But it depends on the student's individual circumstances.
			Teacher B	Feasible. This is also required by the Education Bureau.
			Teacher C	Feasible. This is also required by the Education Bureau.
	3.	What do you think are the effects of using gamified teaching on the development of music teaching activities?	Teacher A	Positive effects: Lively classroom atmosphere, engaging students in learning. Negative effects: Difficulty in controlling classroom order.
			Teacher B	Positive effects: Helps students better understand the teaching content, engaging students' interest in learning. Negative effects: Students' reluctance to participate in games due to different preferences.
			Teacher C	Positive effects: Engaging students' interest in learning, adding interest to the classroom. Negative effects: Sometimes affects classroom order.
Use of Gamification in Teaching	4.	How often do you use gamified teaching in your teaching process?	Teacher A	About 3 to 4 times a week with 8 lessons.
			Teacher B	About 5 or 6 times a week with 16 lessons.
			Teacher C	About 13 times a week with 16 lessons.

Table 4.1 : Continued

	5.	Are the games you use more original, borrowed from other teachers or are they from the three music pedagogies?	Teacher A	Borrow game ideas from other teachers.
			Teacher B	Games borrowed from other teachers or music pedagogy.
			Teacher C	Use previously created games or borrow games from other teachers and adapt them.
	6.	Do you create games based on your teaching? Why?	Teacher A	No. It takes energy to create, can't think of anything creative
			Teacher B	No. Want to create but have limited creativity and no time to do so.
			Teacher C	Yes. The previous years would create more of them, less time and less creation now.
	7.	What approaches do you incorporate into your game design?	Teacher A	None.
			Teacher B	None.
			Teacher C	Design games based on the content, for example by adding traditional children's songs.
	8.	What forms of music games do you play in your classroom?	Teacher A	Body rhythm games, lyric/song solitaire games and role-play games.
			Teacher B	Body rhythm games, lyrics creating games and instrumental accompaniment games.
			Teacher C	Rhythm games, solitaire games and lyrics creation games.
Gamification Training	9.	Do you know anything about gamified teaching? How did you find out about it?	Teacher A	Know some, through the training organised by the school.
			Teacher B	Know some, through some lectures and training.
			Teacher C	More by attending relevant lectures, training and reading literature.
	10.	Have you attended training on the Music Games Approach or the three music pedagogies?	Teacher A	Attended some, more training in music pedagogy than in music games.
			Teacher B	Attended some, more training in music pedagogy than in music games.
			Teacher C	Attended.

Table 4.1 : Continued

	11.	How have you participated in music teaching training?	Teacher A	Several lectures and training were organised by the school and the Beijing Education Bureau.
			Teacher B	Through training organised by the school or by the Education Commission.
			Teacher C	A number of lectures and training were organised by the school and the Beijing Education Bureau.
	12.	Do you take the initiative to attend some off-campus training? Why?	Teacher A	No. It will take time away from spending time with family.
			Teacher B	No. Will take time away from rest, fee required.
			Teacher C	Yes. Interest in gamification teaching.
Challenges and Factors Influencing Gamification of Teaching	13.	Do students enjoy playing games in the classroom?	Teacher A	Most students like it, but one or two may not like it so much.
			Teacher B	liked it more in the lower years than in the upper years.
			Teacher C	liked it more in the lower years than in the upper years.
	14.	What problems/difficulties have you encountered in using gamified teaching?	Teacher A	Problems: Games can sometimes interfere with classroom order. Difficulties: It will increase the workload of lesson preparation, no knowledge of new games.
			Teacher B	Problems: Games can sometimes interfere with classroom order. Difficulties: The game types do not meet the preferences of all students, Make lesson preparation more difficult.
			Teacher C	Problems: Games can sometimes interfere with classroom order. Difficulties: Reluctance of upper-year students to participate in games, Make lesson preparation more difficult.

Table 4.1 : Continued

	15.	Have you tried to solve the difficulties? In what ways?	Teacher A	Yes, but not very effective. Call the student's name, and ask them to stop playing.
			Teacher B	Yes, but not very effective. Calling students by name, walking up to them to remind them that.
			Teacher C	Yes, but not very effective. Calling students by name, walking up to them to remind them, shortening the game.
	16.	What factors do you consider before using gamification for teaching?	Teacher A	Status of students in lesson taught; content of the lesson; and availability of time to prepare for the game.
			Teacher B	Status of students in lesson taught; availability of time to prepare for the game; and availability of other teachers to sit in during the lesson.
			Teacher C	Status of students in lesson taught; content of the lesson; and availability of time to prepare for the game.
	17.	What factors do you consider in the use of game types?	Teacher A	Ease of use in terms of accessibility; availability of adequate games teaching aids.
			Teacher B	Whether it is flexible and easy to use; whether the difficulty of the game is suitable for the level of the students.
			Teacher C	Ease of use and compatibility with course content.
Orff, Kodály and Dalcroze Music Pedagogy	18.	Do you know the three music pedagogies Orff, Kodály and Dalcroze?	Teacher A	Learn some.
			Teacher B	Learn some.
			Teacher C	Learn about.
	19.	Do you use any of these three music pedagogies?	Teacher A	Orff and Kodály use some, Dalcroze less.
			Teacher B	**Kodály vocal rhythms are used a lot, followed by Orff.**
			Teacher C	Vocal exercises using Kodály's vocal rhythms.

Table 4.2 : Data Recorded from Observations of 47 Music Lessons

Data from course observation record ("/" indicates that it is not relevant to this topic)				
CATEGORY	**SUB-CATEGORIES**	**GAMIFICATION (G)/ NON-GAMIFICATION (NG)**	**YEAR**	**CONTENT/ NUMBER**
Music Course Curriculum	Number of music lessons per week	/	Year 1	2 lessons of 40 minutes each
			Year 2	2 lessons of 40 minutes each
			Year 3	2 lessons of 40 minutes each
	Music Lesson Categories	/	Year 1	Singing lessons 12, Appreciation lessons 3, Music knowledge lesson 1.
			Year 2	Singing lessons 11, Appreciation lessons 3, Music knowledge lesson 1.
			Year 3	Singing lessons 10, Appreciation lessons 5, Music knowledge lesson 1.
Music Teaching Facilities	Facilities used by teachers	/	/	Music classroom: No Instruments for accompaniment: No Media Player: Yes
	Facilities used by students	/	/	Instrument: Triangles 2 Sand hammer 6 Twin Tone Block 2 Rattle board 4 Tambourine 2

Table 4.2 : Continued

Music Teaching Content	Music teaching methods	G	Year 1	11
			Year 2	9
			Year 3	12
		NG	Year 1	5
			Year 2	6
			Year 3	4
	Number and frequency of student distractions	G	Year 1	Number of distractions students: 68 Number of distractions: 99
			Year 2	Number of distractions students: 51 Number of distractions: 68
			Year 3	Number of distractions students: 77 Number of distractions: 107
		NG	Year 1	Number of distractions students: 40 Number of distractions: 64
			Year 2	Number of distractions students: 49 Number of distractions: 74
			Year 3	Number of distractions students: 22 Number of distractions: 34
		/	Year 1	Total number of distractions in the morning: 50 Total number of distractions in the afternoon: 58
			Year 2	Total number of distractions in the morning: 52 Total number of distractions in the afternoon: 48
			Year 3	Total number of distractions in the morning: 42 Total number of distractions in the afternoon: 57
	Percentage of teacher-student interactions	G	Year 1	100%
			Year 2	100%
			Year 3	99.4%
		NG	Year 1	100%

Table 4.2 : Continued

			Year 2	98.9%
			Year 3	96.9%
	The number of times teachers maintain order in the classroom in gamification teaching	G	Year 1	Number of non-game parts: 7 Number of game parts: 16
			Year 2	Number of non-game parts: 7 Number of game parts: 9
			Year 3	Number of non-game parts: 7 Number of game parts: 15

4.2 Music Curriculum in the Primary School

The number of music lessons for Year 1–3 at the No. 2 Experimental Primary School in Shijingshan District, Beijing, is two lessons a week, one in the morning and one in the afternoon, and the length of a single lesson is the same as that of other subjects, which is 40 minutes. For example, in Year 3, there are 30 lessons a week: 5 physical education (PE), 4 Chinese, 4 Math, 4 English, 2 music, 2 art lessons.

The school uses the primary school music textbook, *Music in Brief* (People's Music Publishing House, 2015), which divides the teaching content of each semester into nine curricular units based on themes, and each unit consists of singing, listening, knowledge and skills, and creative activities. The singing section provides song sheets for students to learn and sing, guided learning questions and games; the listening section provides music clips for students to listening to, knowledge of the musical score and instruments; the knowledge and skills section provides rhythm practice and knowledge of music notes; and the creative activity is a blank section for teachers to create their own activities. As an example,

Table 4.3 : Nine Themes in the Textbook for the Second Semester of Year 3

Themes	Singing	Listening	Knowledge and skills	Creative activities
Love of Motherland [爱祖国]	"Motherland, Motherland, We Love You" [祖国, 祖国, 我们爱你]	"We Walk Into the October Sunshine" [我们走进十月的阳光]	Getting to know Xian Xinghai [认识冼星海]	
	"Only Without Resistance" [只怕不抵抗]	"Ode to the Red Flag (clip)" [红旗颂（片段）]	Fermata	
		"The Ballad of Lugou" [卢沟谣]	Choir	
Beautiful Child's Voice [美妙童音]	"Boat-rocking Tune" [摇船调]	"Guess the Tone of a Voice" [猜调]	Jump mark	
	"Little Birdie" [一只鸟仔]	"Puppet's Gait Dance" [木偶的步态舞]	Voice exercises	
		"Children of the Poor Become Independent Early" [穷人的孩子早当家]		
Our Friends [我们的朋友]	"Naughty Cuckoos" [顽皮的杜鹃]	"Birdsong in the Sky" [空中鸟语]	Solfege: sol, la, si	
			Staccatissimo	
	"Willow Tree Girl" [柳树姑娘]	"Birds in the Shade" [荫中鸟]	Getting To Know Liu Tianhua [认识刘天华]	
			Bamboo flute	
The Spring Song [春天的歌]	"Di Li, Di Li" [嘀哩嘀哩]	"Green Willows" [杨柳青]	Dulcimer	
			Voice exercises	
	"Concerts in Spring" [春天举行音乐会]	"Spring" [春]	Semiquaver	
			Eighth rest	
Concerts [音乐会]	"I am a Little Musician" [我是小音乐家]	"Marching Song (Russian)" [进行曲 (俄罗斯)]	Voice exercises	

Table 4.3 : Continued

	“Loud and Clear Singing” [嘹亮歌声]	“Theme from ‘The New Legend of Jarry the Boy’ ” [《男生贾里新传》主题曲]		
		“Ship Song” [船歌]		
Song of the Shepherd Boy [牧童之歌]	“Shear Sheep’s Wool” [剪羊毛]	“Children Herding Cows” [小放牛]	Suona	
	“Little Sheep Going Home” [小小羊儿要回家]	“The Lonely Shepherd” [孤独的牧羊人]	Semibreve	
Hello Teacher [老师您好]	“Whenever I Walk Past the Teacher’s Window” [每当我走过老师窗前]	“I Love Orchids” [我爱米兰]	Voice exercises	
	“The Sweet Secret” [甜甜的秘密]	“Flying Petals” [飞来的花瓣]	Common Notes & Rests	
Hometown Hymns [家乡赞歌]	“The Children of the Mountains Love the Mountains” [山里的孩子心爱山]	“Pamir, How Beautiful is My Hometown” [帕米尔，我的家乡多么美]	Soprano Mezzo-soprano Tenor	
	“Little Barangay, the Sun of Childhood” [小巴郎，童年的太阳]	“Where the Peach Blossoms Bloom” [在那桃花盛开的地方]	Solfege: re, mi	
		“Solo River” [梭罗河]		
Cow Horn Curl [牛角弯弯]	“Little Shepherd Boy” [小牧童]	“Our Mountain Songs are Full of Cows’ Hair” [我们的山歌牛毛多]	None	
	“Cow Horn Curl” [牛角弯弯]			

During the listening sessions, the three teachers did not teach all of the content in each section of the textbook, but rather selected one or two elements of the textbook to teach. The 16 music lessons in Year 1 consisted of 12 singing lessons, 3 listening lessons and 1 knowledge and skills lesson; the 15 music lessons in Year 2 consisted of 11 singing lessons, 3 listening lessons and 1 knowledge and skills lesson; and the 16 music lessons in Year 3 consisted of 10 singing lessons, 5 listening lessons and 1 knowledge and skills lesson. Singing lessons are the most taught content in the primary school music curriculum, and the younger the students, the more often teachers choose to teach singing lessons. The number of listening lessons is directly proportional to the growth of students' age: the older the students, the number of singing lessons decreased and the number of listening lessons increased (Figure 4.1).

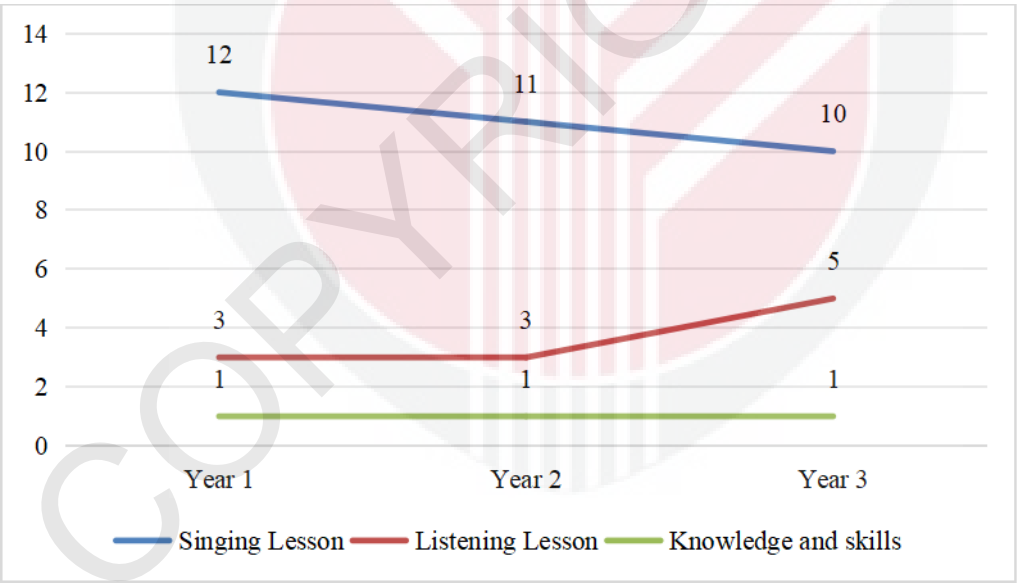

Figure 4.1 : The Number of Different Educational Components Taught in the Music Curriculum in Years 1 to 3

On a weekly basis, the school provides a reasonably decent quantity of music classes for each class. In terms of music teaching content, the three teachers are allowed to pick appropriate content according to the age of the children. During the lesson

observation period, the three teachers taught or allowed students to enjoy new songs or pieces of music in every lesson, and there were no instances where a song required two lessons to learn. Taking the singing lessons as an example, the teaching objectives set by the three teachers included 1) students could sing the song in its entirety and 2) students could memorise the lyrics. There were 81% of the 33 singing lessons met the teaching objectives, and the reasons for not achieving the objectives were due to the songs having multiple passages or stanzas and the students could not memorise all the lyrics.

4.3 Current State of Gamification Teaching

The study of the current status of gamification in this school analysed four main aspects: 1) the teachers' definition of gamification; 2) the frequency of gamification; 3) the implementation of gamification in the lessons, including: (a) the integration of games with the teaching content, (b) the game resources used and (c) the maintenance of order in the teaching of gamification; and 4) the interaction between teachers and students.

4.3.1 Teachers' Definitions of Gamification

In the interviews, the three teachers had approximately the same definition of gamification, they believed that gamification is the integration of teaching content into games and teaching through games (Table 4.4). Combining the three teachers' definitions of gamification and Song's (2020) definition of gamified teaching, lessons in which teachers used games or had a form of play (e.g., rules and competitions) in their teaching were categorised as gamified teaching in the lesson observations.

Table 4.4 : Definition of Gamification Teaching by the Three Teachers

Three teachers' definitions of gamification teaching	
Teacher A	Gamification is the incorporation of playful activities into teaching and learning while playing.
Teacher B	Gamification is the incorporation of teaching content into games and teaching by doing games.
Teacher C	Gamification is the integration of teaching content into a game, in the form of a game that actively participates students in the teaching.

4.3.2 Frequency of Gamification

Of the 47 lessons observed in the three grades, 32, or nearly 68%, were gamified. In Year 1, there were 11 gamified lessons with a total of 22 games played, and 5 non-gamified lessons; in Year 2, there were 9 gamified lessons with a total of 14 games played, and 6 non-gamified lessons; and in Year 3, there were 12 gamified lessons with a total of 19 games played, and 4 non-gamified lessons, with the proportion of gamified lessons significantly higher than the proportion of non-gamified lessons (Figure 4.2). Across all lessons, Teacher A used the game an average of 1.37 times per lesson; Teacher B used the game an average of 0.93 times per lesson; and Teacher C used the game an average of 1.18 times per lesson (Table 4.5). It can be seen that Teacher C used gamification the most according to lesson whilst Teacher A used the game the most in a single lesson.

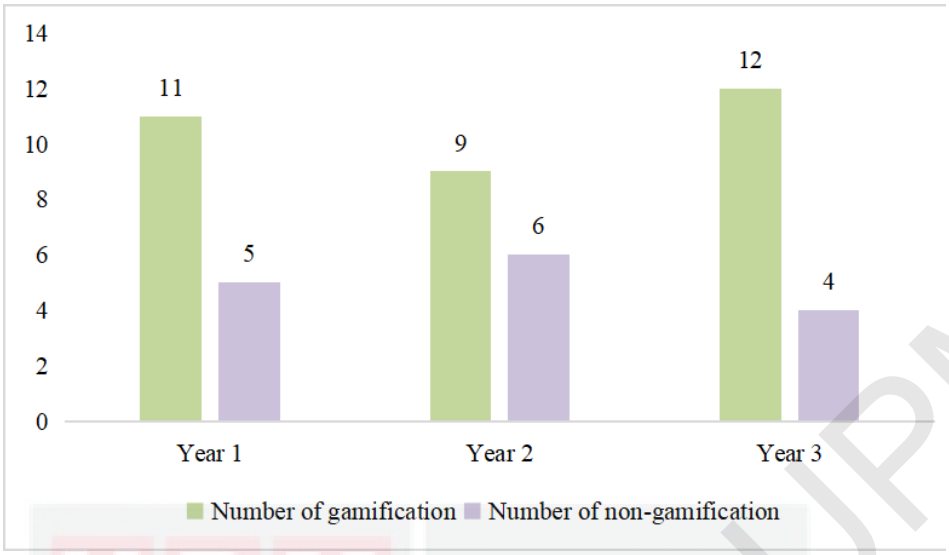

Figure 4.2 : Number of Gamified Music and Non-Gamified Music Lessons in Year 1 to 3

Table 4.5 : The Total Number of Games Used in the Gamified Music Curriculum for Year 1 to Year 3 and the Average Number of Games for the Total Lessons

Year	Number of Teaching Lessons	Total Number of Games	Average Number of Games for the Total Lessons
Year 1	16	22	1.37
Year 2	15	14	0.93
Year 3	16	19	1.18

Throughout the lesson observation period, the three music teachers at the school employed gamified education more frequently than non-gamified instruction. Although all three teachers indicated in their interviews that they did not use exactly the same types of games, all three teachers regularly used gamification strategies in their teaching.

4.3.3 Implementation of Gamification in the Lessons

During the data collection period, the three music teachers used gamification more frequently than non-gamification. This section analyses the teachers' integration of

games and teaching content, the resources of games used, and order maintenance in gamification.

4.3.3.1 Integration of Games and Teaching Content

The teachers used 11 types of games: Role Play, Creating Games, Body Rhythm Games, Riddles, Quiz Games, Rhythm Games, Song/Lyrics Solitaire, Imitation Games, Breakout Games, Melody Games and Instrumental Accompaniment Games. The most used game type was Body Rhythm Games, which was used 21 times, followed by 9 times of Creating Games and 6 times of Role Play. Quiz Games, Rhythm Games and Instrumental Accompaniment Games were the least used, all being used only once (Figure 4.3).

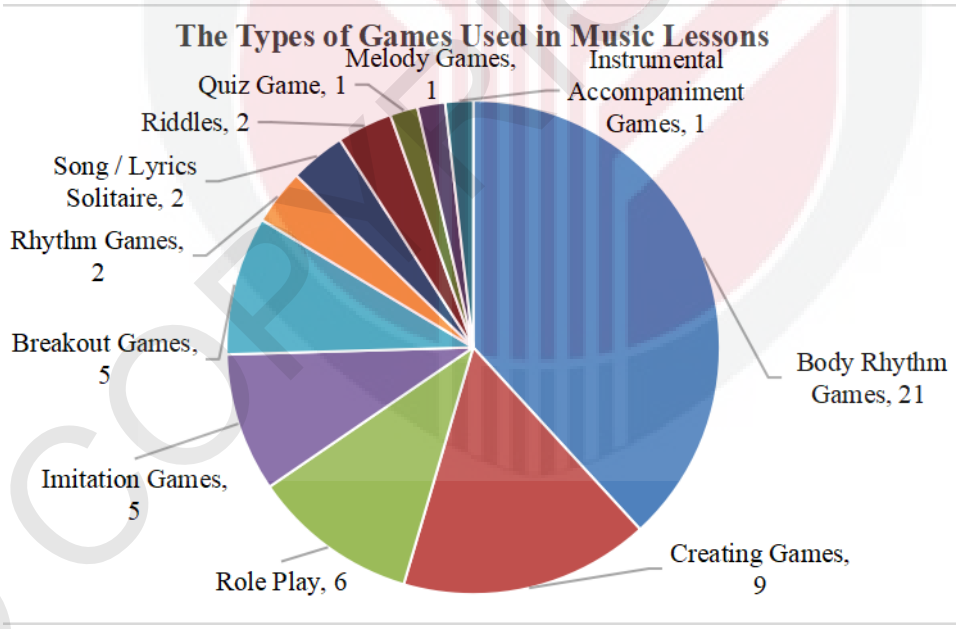

Figure 4.3 : The Types and Numbers of Games Used in Music Lessons

According to Zou (2021) who classified music games according to the content of instruction, the games used by teachers can be divided into five main categories, (1)

rhythm exercises: rhythm games, imitation games and song/lyric solitaire games; (2) musicianship exercises: body rhythm games, melody games; (3) music knowledge exercises: quiz games; creating games and instrumental accompaniment games; and (4) other games (games used in the introductory part of the lesson): role play, riddles and breakout games (Table 4.6).

Table 4.6 : Classification of the Games according to Zou (2021) and the Content of the Individual Games

Classification	Type of Games	Definition	Example
Rhythm Exercises	Rhythm games	Based on the rhythm pattern presented by the teacher, students play the rhythm by clapping their hands or tapping the table.	In the Year 1 singing lesson "Yi Children are Happy" [彝家娃娃真幸福] rhythm teaching, the students learnt the rhythm of the song by tapping on the table.
	Imitation games	Students imitate the teacher's movements and language for the game.	In the Year 2 singing lesson, "Harilo" [哈里啰], students play games by imitating the teacher's movements and voice.
	Song/lyric solitaire games	One student sings a line of the song or recites a lyric, and groups of several students work together to sing/recite the complete song/lyric.	In the Year 3 singing lesson "The Ballad of Malan" [马兰谣], the teacher sings the song with the pupils, one after the other.
Musicianship Exercises	Body rhythm games	Body rhythms or dance to the melody of the music.	In the Year 2 singing lesson "The Crab Song" [螃蟹歌], the students move their bodies according to the lyrics to help them memorise them.
	Melody games	The teacher breaks up the melody of each line of the song and asks the students to put the melody together to make a complete song.	In the Year 2 singing lesson "Little Rain Rustling" [小雨沙沙沙], the teacher shows the melody sheet music and plays the recording, and the

Table 4.6 : Continued

			students choose the correct sheet music according to the recording.
Music Knowledge Exercises	Quiz games	The teacher asks questions related to the learning content for students to answer and sets up a reward mechanism.	In the Year 1 Knowledge Skills lesson "The Sound of High And Low" [音的高低], the teacher plays a recording of two voices, and for each group, the teacher asks the students which voice is high and which one is low, and the students answer the question.
	Creating games	Based on the melody of the learned song, the teacher guides the students to create new lyrics and sing them.	In the Year 2 singing class "A Pair of Good Friends" [一对好朋友], after learning to sing the song, the teacher guides the students to create new lyrics and sing them according to the theme of good friends.
	Instrumental accompaniment	Students accompany the song with instruments.	In the Year 2 singing lesson "Little Animals Sing" [小动物唱歌], students used triangles, sand hammers, clanging bells and double-bells to simulate the sounds of different animals to accompany the song.
Other Games (Games used in the introductory part of the lesson)	Role play	The teacher creates a storyline based on the content of the song and allows the students to play the roles of the characters in the story.	In the Year 3 singing lesson "I'm a Little Musician" [我是小音乐家], students act out different characters in the song, singing and performing concert scenes.
	Riddles	A riddle is used to introduce the theme of the song and attract the attention of the students, mostly in	In the introductory section of the Year 3 singing lesson "Rocking the Boat" [摇船调], the teacher

Table 4.6 : Continued

		the introductory part of the lesson.	tells a riddle about a boat for the students to guess, which leads to the theme of the song.
	Breakout games	Teachers set up game levels and elimination mechanisms to determine the winners through rounds of play.	In the Year 1 singing class "Tujia Children Are Really Happy" [土家娃娃真幸福] in the introduction of the lesson, the teacher randomly shows the melody of the songs learned in the past fragments, melodic difficulty from simple to complex, the students correctly sing a melody to mark one point, the students who get five points can get a point stamp.

Most of the games used by the three teachers in the gamified music curriculum were integrated with the content and served to support teaching and learning. Firstly, of all the games used by the teachers, the most used were body rhythm games, creating games and role play games. As singing lessons were the most frequently used in Year 1–3 followed by listening lessons and finally music knowledge lessons, the teachers chose to use more body rhythm games to help students learn the rhythm of the song, the melody of the song and to feel the pauses in the musical phrases. Secondly, Year 1–3 students are younger and slower to learn, so teachers needed to help them create a learning environment and role play games can help students understand what they are learning through stories and also engage their attention. Therefore, most of the games used by the teachers are suitable for teaching music in Years 1–3 and achieve the aim of helping students to learn. For example, the teaching objectives of the Year 1 listening lesson "One Master, Three Apprentices" [一个师傅仨徒弟] were: (1) to

make students understand the storyline of the song, and (2) to learn the rhythm of the song. Teacher A chose to use role play games and body rhythm games to support students' learning. Firstly, students were asked to play different roles in the song to quickly understand the storyline of the song through interpretation; secondly, following the recording of the song, the teacher led the students to perform body movements, changing the speed of the movements according to the rhythm of the music, so that the students could feel the rhythm of the song through their body movements.

However, there were a small number of games that were not in line with the teaching objectives of the lessons. For example, in the Year 2 listening lesson "Gavotte", Teacher B set the teaching objectives of introducing students to the Gavotte people, French architecture and style, and learning about the melodic features of the piece. Before asking the students to create a French-inspired dance, the teacher could have introduced the students to the Gavotte people and shown them a video or demonstration of some French-inspired and unique Gavotte dance moves. However, this was omitted and the students were directly asked to create their dance moves. The students did not know anything about the Gavotte people and did not know which dance moves had a French flavour, so the students created a dance that fell short of the French flavour required by the teacher. At the end of the lesson, only one of the teaching objectives of learning the melodic characteristics of the music had been achieved, and not all the objectives that had been set had been realised. The creation of a dance game also did not fulfil the teaching objective of helping students to understand the French style and the Gavotte nation.

Some games focused only on enlivening the classroom. The excessive use of games enhances the liveliness of the classroom but lacks the depth and the purpose of teaching. For example, in the Year 1 singing lesson "Little Bee", Teacher A used three types of games in the lesson: an imitation game, a song solitaire game and a lyric creating game. In the imitation game, the teacher aimed to get the students to guess the theme of the song by imitating the movements of the bee. However, in the game, the teacher made too many imitations of different animals and the students were very excited to participate in the game, but it was not relevant to the content and objectives of the lesson and took up too much of the lesson time, resulting in shortening the length of the games related to the teaching objectives later.

4.3.3.2 Resources of Games Used

The majority of the games used by instructors in gamified teaching were borrowed from other teachers or adapted from other music pedagogies, such as the Orff music pedagogy. During the interviews, Teacher A said that most of the games she used were referred from the Internet and some of the games from the Orff pedagogy. Teacher B said that when she observed music lessons in her school and other schools, she would record the games used by other teachers and apply them to her own lessons. Teacher C said that some of the games she used were games she had created in the past and some were borrowed from teachers in other schools. (Table 4.7).

Table 4.7 : Sources of Games Used by Each of the Three Teachers

Teacher A	Learning from the internet, Orff music pedagogy
Teacher B	Observation of other teachers' lessons
Teacher C	Create games and learn from other teachers

Teachers have varying opinions on teacher-created games. Teacher A was reluctant to create games by herself, she felt the process of creating games was too draining. Teacher B wanted to use created games but felt she was not creative enough to design original games that could be used. Teacher C was willing to create games and had designed some original games in her first few years of teaching, but did not design more because her teaching was currently intensive.

4.3.3.3 Order Maintenance in Gamification Teaching

During the lesson observations, the number of students distracted during music class and the number of times they were distracted were recorded separately. The total distraction rate was 20 % for Year 1 students, 19.6 % for Year 2 students and 18.3 % for Year 3 students. Students' distracting behaviours were reflected in communicating with other students in class about things unrelated to learning, inattentive and doing things unrelated to music lessons. For example, writing assignments in other subjects during music class. When the same student showed multiple distractions, the number of distractions was not recorded repeatedly and the number of times was recorded as multiple. Based on the percentage of the total number of distractions in Year 1–3 (Figure 4.4), the number of students who become distracted in class decreases as they get older. The older the students are, the greater their sense of order and discipline in the classroom.

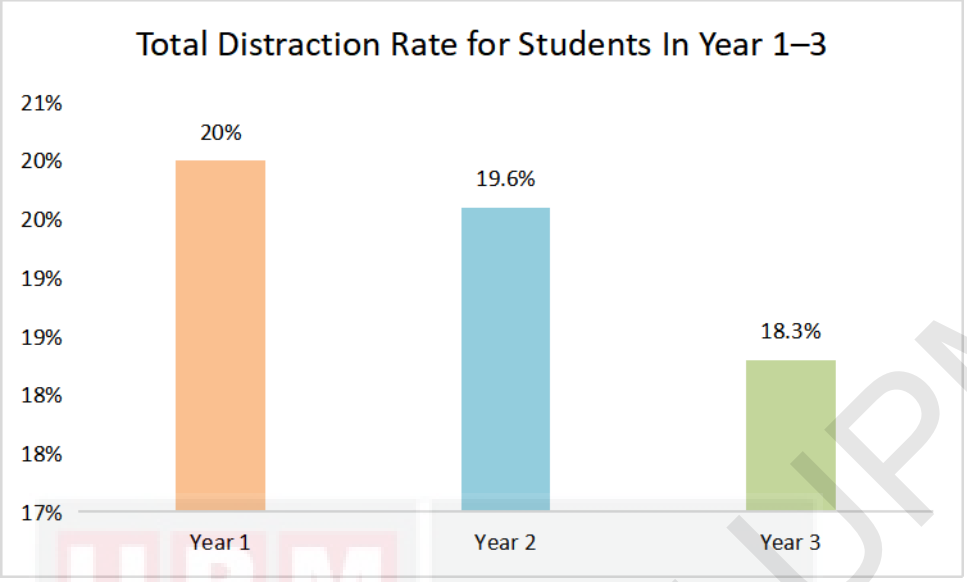

Figure 4.4 : Percentage of Distractions in the Music Lessons in Year 1–3

In the process of teaching, due to the young age of students in Year 1–3, it is unavoidable to have disruptions in the classroom, which requires teachers to maintain classroom order in time while teaching. In the observed lessons, Teacher A's 11 gamification lessons maintained class order in the non-gamification part 7 times and in the gamification part 16 times; Teacher B's 9 gamification lessons maintained class order in the non-gamification part 7 times and in the gamification part 9 times; and Teacher C's 12 gamification lessons maintained class order in the non-gamification part 7 times and in the gamification part 15 times (Table 4.8).

Table 4.8 : Number of Times the Teachers Maintained Order during Game Part and Non-Game Part in a Gamified Lessons

Year & Class	During Non-Game Part	During Game Part
Year 1 Class 1	7	16
Year 2 Class 1	7	9
Year 3 Class 3	7	15

In interviews with three teachers about the problems encountered in using gamification, all three teachers also said that students tend to make the classroom noisy and unmanageable when they are involved in games. For example, Teacher B described:

> The problem I encounter is that sometimes students are so involved in playing the game that when I ask them to stop, it is not easy to manage and this can make the class disorderly. (Teacher B, personal communication, April 25, 2022)

The teachers have also tried to take steps to maintain order in the classroom when students are noisy during their participation in games (Figure 4.9). For example, they would call students by name to remind them not to get too excited, or they would walk up to them and tap them on the table or arm to remind them of the classroom order. Although the teachers tried to maintain order in the classroom, the students were so excited to play that they often ignored the teachers' reminders and only focused on playing games.

In their excitement, the students ignored the teacher's reminders, resulting in the teacher becoming passive in classroom management. During the lesson observations, teachers were more likely to manage the students by making them stand in a corner and refusing to allow overexcited students to participate in the game. All the three teachers reported that they initially used more positive measures, such as changing seats and grouping the noisy students and allowing them to work with calm students, but this did not work well and affected the learning experience of other students. Teacher C described:

> I also wanted to help these noisy students, so I tried many things at first, such as putting an introverted student in a group with him or changing the type of game I was playing; but perhaps this student is naturally active, so the previous methods did not work well. I had to keep him out of the games when the other students were playing, as there were 30 students in the class, and I couldn't let him affect the learning of the others. (Teacher C, personal communication, November 26, 2022)

Although the teacher took some measures to maintain order in the classroom, the inevitable excitement of the students while playing the game made it more difficult for the teacher to maintain order and led to a slight negative treatment.

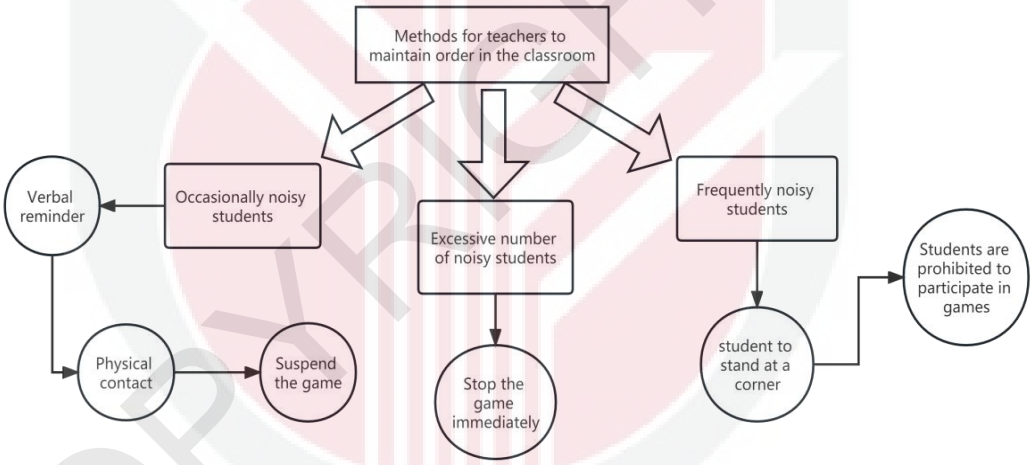

Figure 4.5 : The Methods Used by Teachers to Maintain Order in the Classroom When Students are Involved in Games

4.3.4 Student-Teacher Interaction

Teacher-student interactions were analysed on the basis of questions or instructions given by the teacher being responded by the students as recorded in the observation forms. Instructions mean that the teacher asks the students to do something or behave in a certain way, for example, the teacher asks the students to stand up and sing.

Teacher A asked questions and gave instructions 248 times in 16 lessons, an average of 15.5 times per lesson. Teacher B asked questions and gave instructions 240 times in 15 lessons, an average of 16 times per lesson. Teacher C asked questions and gave instructions 261 times in 16 lessons, an average of 16.3 times per lesson.

The teacher-student interaction rate was 100% in the Year 1 gamified music lessons and 100% in the non-gamified music lessons. The teacher-student interaction rate was 100% in the Year 2 gamified music lessons and 98.9% in the non-gamified music lessons. In the Year 3 gamified music lessons, the teacher-student interaction rate was 99.4% and 96.9% in the non-gamified music lessons (Figure 4.6).

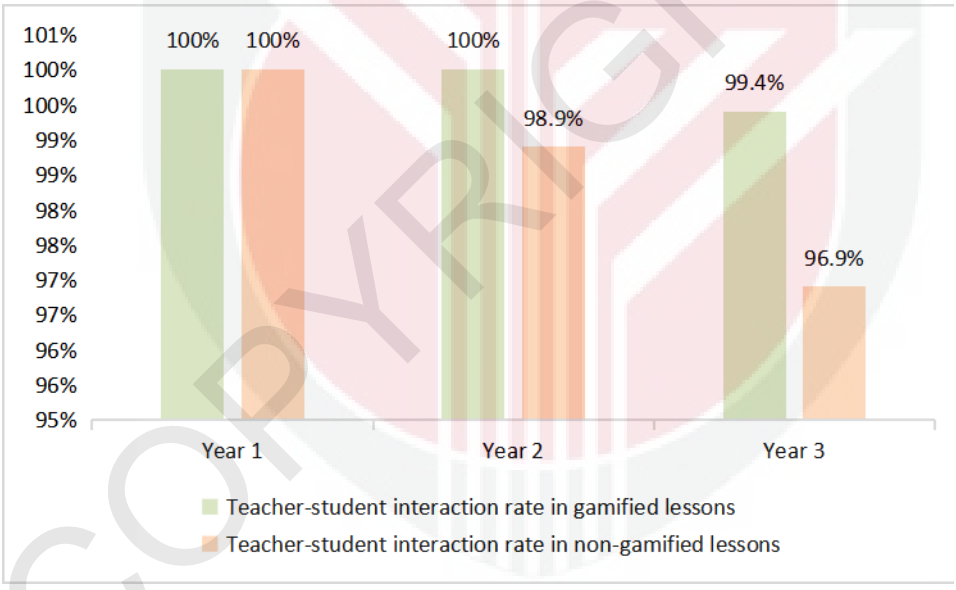

Figure 4.6 : Teacher-Student Interaction Rates in Gamified and Non-Gamified Music Lessons

The teacher-student interaction rates for the three grades show that the music classrooms had good teacher-student interaction during the period of observation, with rates above 95% for all three grades in both gamified and non-gamified lessons. It is clear from the graphs that the teacher-student interaction rate decreases with the age

of the students, with the rate decreasing slightly in the gamified lessons and more distinctively in the non-gamified lessons, which shows that the gamification method has a better outcome on the teacher-student interaction rate.

4.3.5 Gamified Music Teaching and "Flow" Theory

The "Flow" theory emphasises the importance of engaging participants in what they enjoy, ensuring that they are fully focused and that they were oblivious to the time (Csikszentmihalyi, 1975). Massimini and Crali (1988) created a model of the "Flow" psychological experience, suggesting that the experience of "Flow" is related to the level of skill and difficulty of the challenge, and that the experience of "Flow" is achieved when the skill and difficulty of the challenge are in balance (Figure 4.7).

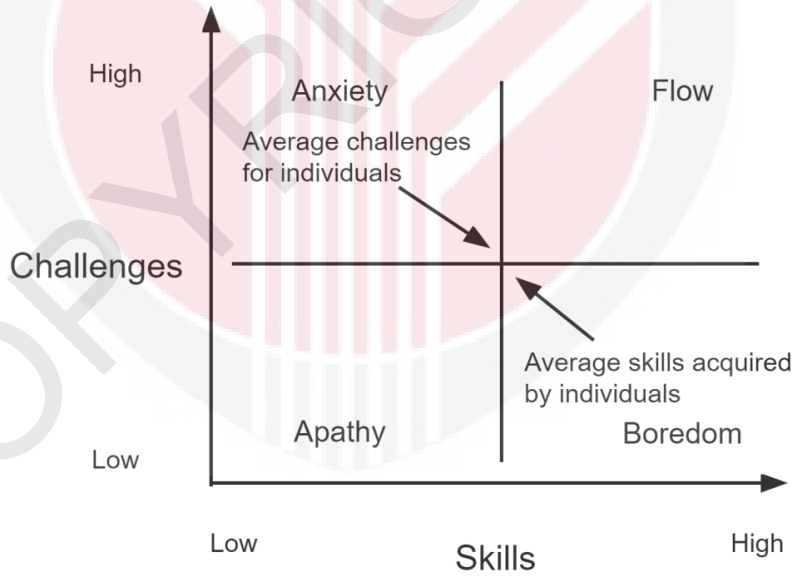

Figure 4.7 : The "Flow" Psychological Experience Model (Massimini & Carli, 1988)

The use of gamification is largely consistent with the "Flow" theory, with the main aim of getting students actively engaged in learning activities, enjoying learning and focusing on the process, thus creating a sense of oblivious of themself and a strong

motivation to learn (Yan, 2022). An immersive teaching and learning environment enables students to immerse themselves and experience the work in order to understand and master it (Fu, 2010), and students' distractions during the lesson can clearly reflect whether they are immersed in the learning environment. Furthermore, in order to achieve student immersion, teachers need to create a positive learning environment by interacting with students and using games to help them get into a state of learning. Therefore, the effectiveness of the teacher's use of gamification in teaching music to achieve student immersion was analysed by combining the number of distractions, the number of interactions between the teacher and the students and the number of games used by the teacher.

4.3.5.1 Effectiveness of Gamified Teaching in Music

In the lesson observations, a total of 11 gamified music lessons were collected in Year 1, with a total number of 68 students distracted and an average of about 6.2 students distracted per lesson; 9 gamified music lessons were collected in Year 2, with a total number of 52 students distracted and an average of about 5.6 students distracted per lesson; 12 gamified lessons were collected in Year 3, with a total number of 77 students distracted and an average of about 6.4 students distracted per lesson. The total number of students distracted was 77, with an average of 6.4 students distracted per session (Table 4.9).

Table 4.9 : Number of Gamified Sessions, Total and Average Number of Student Distractions in Year 1–3

Year	Number of gamification lessons	Total number of student distractions in gamified music lessons	Average number of student distractions in gamified lessons
Year 1	11	68	6.2
Year 2	9	51	5.6
Year 3	12	77	6.4

In conjunction with the "Flow" theory, the "Flow" psychological experience model and the four essential characteristics that a game must have as summarised by McGonigal (2011), criteria were developed for evaluating whether teachers' use of gamification contributed to student learning by developing a Gamification Effectiveness Assessment Form (Csikszentmihalyi, 1975; Massimini & Carli, 1988; Ma & Sui, 2010), based on the number of games played, the rate of teacher-student interaction and the number of students who are distracted. These criteria were developed based on the above theory, with seven criteria of one point each, and lessons that achieved a total score of seven points were evaluated as effective gamification lessons. Meanwhile, the average rate of teacher-student interaction at 100% in the gamification lessons for Year 1–3 in the lesson observation was at 99.8%, so this was added to the evaluation criteria (Table 4.10; Table 4.11; Table 4.12).

Table 4.10 : Gamification Effectiveness Assessment form of Teacher A's Gamification in Relation to the "Flow" Theory and the "Flow" Psychological Experience Model

(√ indicates a point score, × indicates no point)									
Lesson No.	**100% teacher-student interaction in the lesson (1 point)**	**The number of students distracted in a single lesson is less than or equal to 5 (1 point)**	**2 or more games used in a single lesson (1 point)**	**With clear goals for the game (1 point)**	**Uniform and detailed rules (1 point)**	**Students are free to participate in the game and follow the rules of the game (1 point)**	**Teachers have an evaluation after the game (1 point)**	**Total points**	**Is effective teaching achieved**
1	√	×	√	√	√	√	×	5	No
2	√	×	√	√	√	√	√	5	No
3	√	√	×	√	√	√	×	5	No
4	√	×	√	×	√	√	×	4	No
5	×	√	√	√	√	√	√	6	No
6	√	×	√	√	×	√	×	4	No
7	√	√	√	√	√	√	√	7	Yes
8	√	×	√	√	√	√	×	5	No
9	√	√	√	√	√	√	√	7	Yes
10	√	×	√	√	×	√	×	4	No
11	√	×	√	√	√	√	√	6	No

(Csikszentmihalyi, 1975; Massimini & Carli, 1988; Ma & Sui, 2010; McGonigal, 2011)

Table 4.11 : Gamification Effectiveness Assessment form of Teacher B's Gamification in Relation to the "Flow" Theory and the "Flow" Psychological Experience Model

(√ indicates a point score, × indicates no point)									
Lesson No.	**100% teacher-student interaction in the lesson (1 point)**	**The number of students distracted in a single lesson is less than or equal to 5 (1 point)**	**2 or more games used in a single lesson (1 point)**	**With clear goals for the game (1 point)**	**Uniform and detailed rules (1 point)**	**Students are free to participate in the game and follow the rules of the game (1 point)**	**Teachers have an evaluation after the game (1 point)**	**Total points**	**Is effective teaching achieved**
1	√	×	×	√	×	√	√	4	No
2	√	×	×	×	√	√	×	3	No
3	√	×	×	√	√	√	×	4	No
4	√	√	√	√	√	√	√	7	Yes
5	×	√	×	×	×	√	×	2	No
6	√	√	√	√	√	√	√	7	Yes
7	√	√	√	√	√	√	√	7	Yes
8	√	√	×	×	√	√	×	4	No
9	√	×	√	√	√	√	√	6	No

(Csikszentmihalyi, 1975; Massimini & Carli, 1988; Ma & Sui, 2010; McGonigal, 2011)

Table 4.12 : Gamification Effectiveness Assessment form of Teacher C's Gamification in Relation to the "Flow" Theory and the "Flow" Psychological Experience Model

(√ indicates a point score, × indicates no point)									
Lesson No.	**100% teacher-student interaction in the lesson (1 point)**	**The number of students distracted in a single lesson is less than or equal to 5 (1 point)**	**2 or more games used in a single lesson (1 point)**	**With clear goals for the game (1 point)**	**Uniform and detailed rules (1 point)**	**Students are free to participate in the game and follow the rules of the game (1 point)**	**Teachers have an evaluation after the game (1 point)**	**Total points**	**Is effective teaching achieved**
1	√	×	√	√	√	√	√	6	No
2	√	×	×	√	√	√	×	4	No
3	√	√	√	√	√	√	√	7	Yes
4	√	×	√	√	√	√	×	5	No
5	×	×	×	√	√	√	×	3	No
6	√	×	√	√	√	√	×	5	No
7	√	√	×	√	√	√	√	6	No
8	√	×	×	√	√	√	√	5	No
9	√	×	×	√	×	√	×	3	No
10	√	√	√	√	√	√	√	7	Yes
11	√	√	√	√	√	√	√	7	Yes
12	√	×	√	×	√	√	×	4	No

(Csikszentmihalyi, 1975; Massimini & Carli, 1988; Ma & Sui, 2010; McGonigal, 2011)

Through screening, the three teachers met the criteria of effective gamified music teaching in the total of 8 times, accounting for 25% of the total gamified music teaching. The number of effective gamified music teaching lessons for Teacher A was 2, accounting for 18.18% of her total gamified music teaching; for Teacher B, the number of effective gamified music teaching lessons was 3, accounting for 33.30% of her total gamified music teaching; and for Teacher C, the number of effective gamified music teaching lessons was 3, accounting for 25% of her total gamified music teaching (Table 4.13).

Table 4.13 : The Number of Effective Gamified Music Lessons and Their Percentage of the Total Number of Gamified Music Lessons

	Teacher A	Teacher B	Teacher C	Total
Number of gamified music teaching	11	9	12	32
Number of effective gamified music teaching	2	3	3	8
Percentage of effective gamified music teaching	18.18%	33.30%	25.00%	25.00%

The data shows that the effectiveness of the music teachers' gamification teaching in this school is not high, with an average of only 25%, while the effectiveness of Teacher B and Teacher C's gamification teaching exceeds or is on par with the average percentage, and Teacher A's gamification teaching is the least effective, not reaching the average percentage.

From the analysis of effective gamified music teaching sessions, these sessions had several characteristics:

1) Higher number of games with different types of games.

The average number of times teachers used games in a single lesson was 2.37 in all the effective gamification lessons (Table 4.14), and the types of games used in a single lesson were varied and did not repeat the same type of game, fulfilling the "Flow" theory of creating a learning environment. The games are used to support the different learning elements of the lesson, and the different games are used to link the objectives of the lesson together to create a coherent music lesson with high levels of student engagement.

Table 4.14 : The Total Number of Games in the Effective Gamification Lessons and the Average Number of Games Per Lesson of the Three Teachers

	Teacher A	Teacher B	Teacher C	Total
Number of effective gamification lessons	2	3	3	8
Total number of games in effective gamification lesson	5	7	7	19
Average number of games per effective gamification lesson	2.5	2.33	2.33	2.37

2) The games are of moderate difficulty and match the interests of the students.

In terms of the types of games used, the teachers chose games that were appropriate for the age range of the students and that were moderately difficult and appropriate to the content, in line with the flow range of the "Flow" psychological experience model (Table 4.15).

Table 4.15 : Types of Games Used by the Three Teachers in an Effective Gamification Lessons

Teacher	Types of Games in Effective Gamification Lessons
Teacher A	Imitation game (3 times), Solitaire game (1 time), Breakout game (1 time)
Teacher B	Creating game (3 times), Body rhythm game (2 times), Imitation game (1 time), Instrumental accompaniment (1 time)
Teacher C	Body rhythm game (3 times), Riddle game (2 times), Role playing game (1 time), Breakout game (1 time)

For example, Year 1 students were yet to be able to play cooperatively well in difficult games but were more interested in imitating others. Thus, Teacher A used imitation games the most in two effective gamified music teaching lessons. Year 2 students were less interested in simple imitation games and were more receptive to the difficulty of games than Year 1; therefore, instead of using simple imitation games, Teacher B used more independently creating games in the three effective gamified music teaching lessons. Year 3 students have a higher interest in difficult games than Year 1 and 2 students and prefer group cooperation games and therefore Teacher C chose more body rhythm games in three effective gamified music teaching lessons to give students more space to play independently and stimulate their interest in playing.

3) Singing lessons are more likely to achieve effective gamification.

Of the eight lessons of effective gamification music teaching, there were five singing lessons and three appreciation lessons. It is easier to achieve effective gamification teaching in singing lessons, mainly because: firstly, singing lessons make up the largest proportion of the music content taught throughout the term, with the most lesson time; secondly, singing lessons are teaching content that requires a high level of student participation, with more teacher-student interaction, and the process of learning songs is divided into learning rhythms, learning lyrics and learning melodies, allowing the use of many different types

of games, making it easier and more relaxed for teachers to use gamified teaching. Therefore, it is easier for teachers to use gamification in singing lessons to achieve effective gamification in line with "flow" theory.

4.3.5.2 Three Examples of Lessons with Effective "Flow"

The lessons were analysed in relation to the effectiveness of the teachers' gamification of music teaching in the context of the "Flow" theory.

A. Listening Lesson: "Train Polka" [火车波尔卡]

Figure 4.8 : Teaching Slide of the Rhythmic Pattern of the First Phrase of "Train Polka" [火车波尔卡] (from Teacher A)

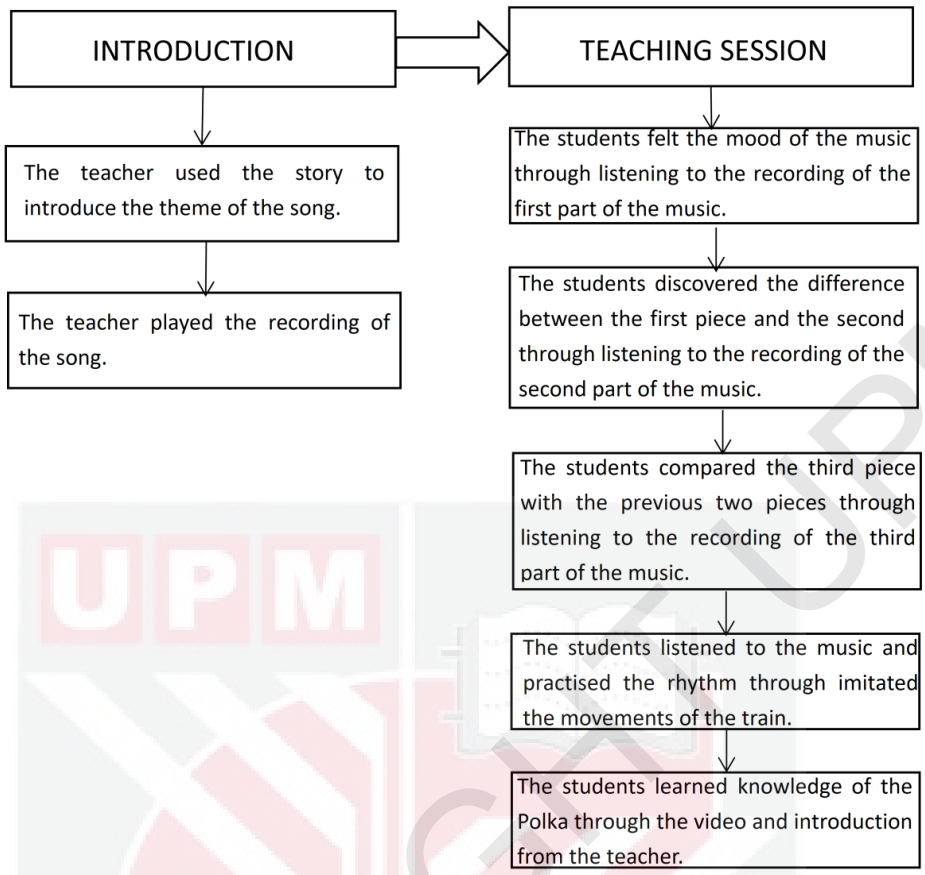

Figure 4.9 : Flow Chart on the Teaching Process of Appreciation Lesson "Train Polka" [火车波尔卡]

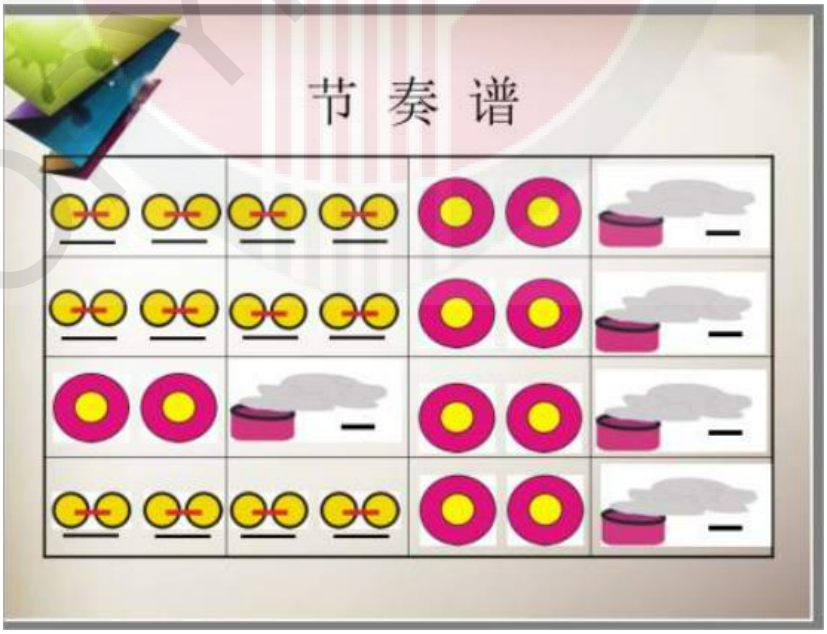

Figure 4.10 : Teaching Slide of the Rhythm in a Rhythm Breakout Game (from Teacher A)

Teacher A taught the appreciation lesson of “Train Polka” [火车波尔卡] (Figure 4.8) to 30 students in a 40-minute session (Figure 4.9). The objectives of this lesson were to listen to the music so that students could feel the mood and learn about polka. In introductory session, the teacher set up a storyline, played a musical clip in the background of the journey, introduced the theme of the “train” and taught the students the main rhythms of the music.

In the teaching section, the teacher demonstrated and led the students in imitating the rhythmic patterns they hear. Students listened to the first section of the piece to get a feel for the emotions expressed in the music of the first part. The teacher asked students what they think is happening in this part of the music and the student practised imitating the rhythm. The teacher grouped the students and guided them to form a train with their group members and imitate the movement of the train according to the rhythm of the music. The teacher played the second part of the piece and asked the students to feel the musical mood of the second part and asked them how the second part of the piece differs from the first part. The teacher played the third part of the piece and asked the students to feel the mood of the third part of the piece and compare it with the first and second parts, looking for commonalities and differences. The teacher set up a breakout game, according to the difficulty of the rhythmic patterns (Figure 4.10), invited students to play the breakout game and sets up rewards. Afterwards, the teacher played the whole music and asked the students to imitate the movements of the train again to the music. The teacher showed the video so that the students can enjoy a live version of the recital and finally the teacher concluded by introducing the students to the polka.

Teaching Evaluation:

During the teaching process, Teacher A used continuous questioning to guide students to think actively about the characteristics, commonalities and differences of the different sections. By creating a storyline and organising imitation and breakout games, students were gradually guided to listen carefully to the rhythm of the music and deepen their memory of it. In the second half of the lesson, the game was played at an accelerated pace, which re-engaged the students' attention and enhances their mastery of the different rhythmic patterns. In terms of knowledge and skills, students learned to differentiate between different rhythmic patterns and also learn about the polka.

B. Singing Lesson: "A Pair of Good Friends" [一对好朋友]

Figure 4.11 : Sheet Music for the Song "A Pair of Good Friends" [一对好朋友] from the Year 2 Lower Music Textbook (People's Music Publishing House, 2013)

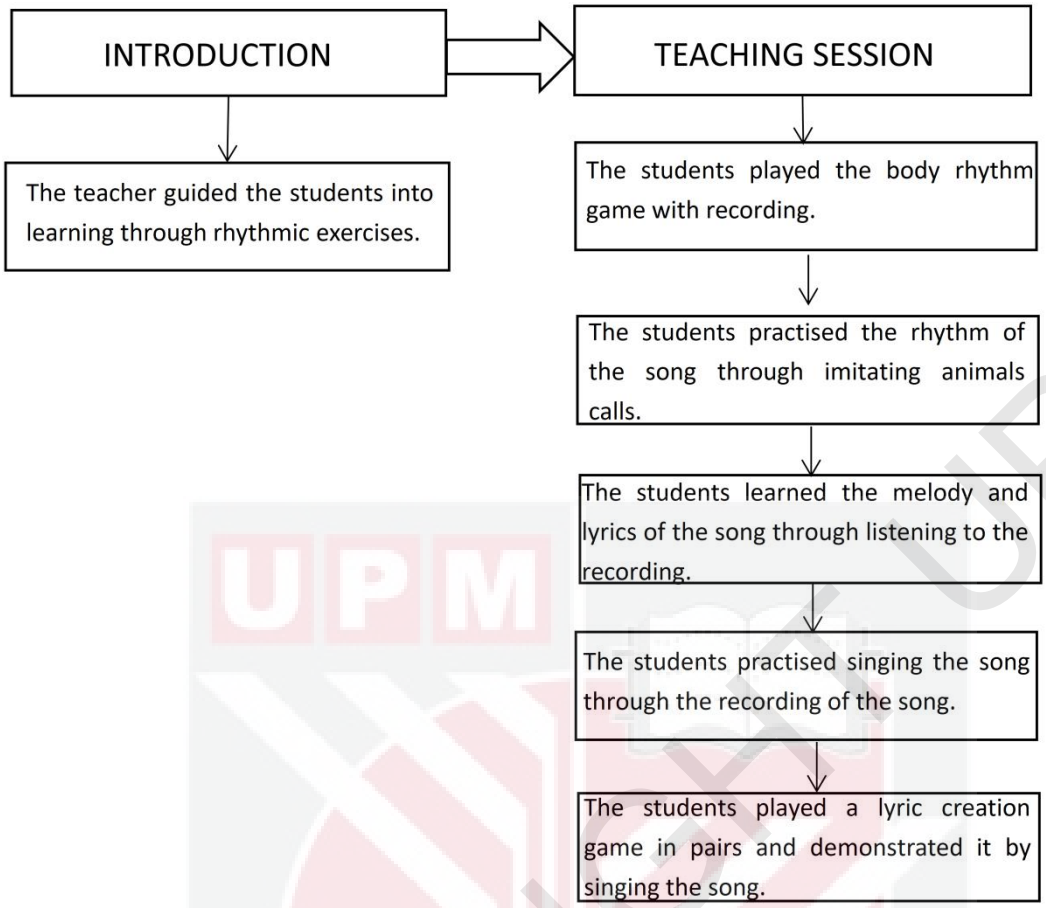

Figure 4.12 : Singing Lesson: "A Pair of Good Friends" [一对好朋友] Teaching Flow Chart

Teacher B taught the singing lesson of "A Pair of Good Friends" [一对好朋友] (Figure 4.11) to 30 students in a 40-minute session (Figure 4.12). The objectives of this lesson were for the students to learn the rhythm of the song and to be able to sing the whole song. In the introductory session, the teacher led students in rhythm exercises to help them focus quickly on their course learning.

In the teaching section, the teacher played the song and leads the students in a body rhythm game based on the melody of the song. Students listened to the song again to get a feel for the melody and to practise the rhythm. The teacher guided the students to imitate the cries of different animals and to practise the strength of the rhythm again.

Listening to the song, the teacher led the students in learning the melody and memorising the lyrics. The teacher demonstrated the rhythmic form of the song and carefully explained how to sing it well. Students sang the song in its entirety and then worked in pairs to create new lyrics based on the theme of the song and demonstrated them by singing the song. The teacher concluded the activity by leading the students through the song again.

Teaching evaluation:

In the teaching process, Teacher B used rhythm exercises as an introductory activity to consolidate and review previous learning. Through body rhythm games, students were given an initial impression of the learning content of the lesson while playing. Three different types of games were designed to enhance students' interest in classroom learning and to link the different teaching elements within the lesson through the games. In the lyric creating game, the teacher allowed students to create their own lyrics to deepen their memory of the theme of the song, while inviting students to present the lyrics and guiding other students to sing the song according to the new lyrics, allowing students to deepen their memory of the melody of the song while avoiding repetitive singing which can easily lead to a boring learning format.

C. Singing Lesson: "Motherland, Motherland, We Love You" [祖国祖国我们爱你]

Figure 4.13 : Sheet Music for the Song "Motherland, Motherland, We Love You" [祖国祖国我们爱你] from the Year 3 Lower Music Textbook (People's Music Publishing House, 2013)

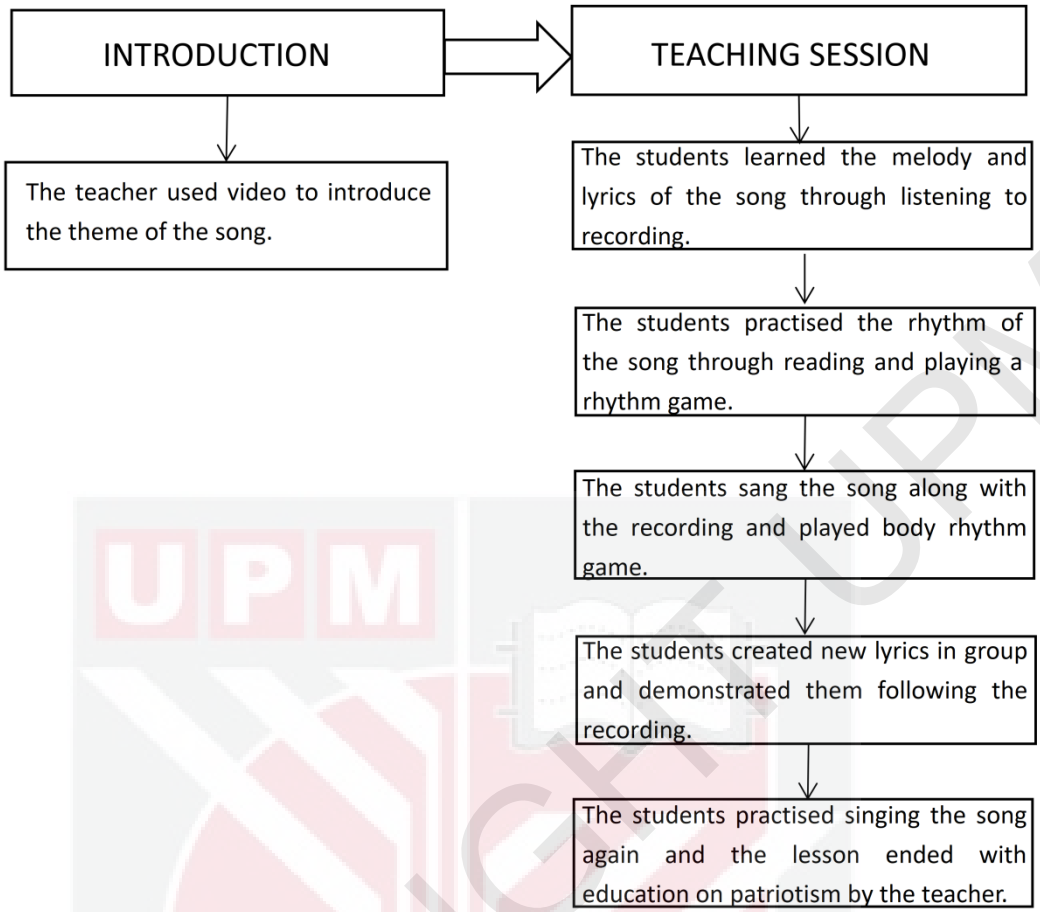

Figure 4.14 : Singing Lesson: "Motherland, Motherland, We Love You" [祖国祖国我们爱你] Teaching Flow Chart

Teacher C taught the singing lesson of "Motherland, Motherland, We Love You" [祖国祖国我们爱你] (Figure 4.13) to 30 students in a 40-minute session (Figure 4.14). The objectives of this lesson were for students to sing the song in its entirety and to develop their feelings of patriotism. In introductory session, the teacher showed a video for the students to view the magnificent mountains of our country.

In the teaching section, the teacher played the song so that students can listen to the melody and get a feel for the lyrics. The students read and memorised the lyrics to the rhythm of the song. Then, the teacher played a rhythm game with the students, and showed some rhythm charts and played a recording of the rhythms, and the students

chose the rhythm charts that matched the rhythms according to the recording. After that, students practised and learned the songs, focusing on the strong and weak treatments of the songs. Subsequently, the students worked in groups to create and sing a second version of the lyrics, following the rhythm of the music and feeling the pauses in the phrases. Finally, listening to the song again, the teacher taught the students to protect peace and to value life.

Teaching evaluation:

During the teaching section, Teacher C introduced the theme of the song by showing a video. Instead of having the students read the lyrics aloud in a "read the text" style, they were asked to read the lyrics aloud according to the rhythm of the phrase, which added interest and familiarised them with the rhythm of the song. In this lesson, the teacher guided the students through different games by following the order of the song's rhythm, melody and lyrics. At the end of the lesson, the teacher guided the students to cherish peace and life in terms of cultivating their patriotism.

4.4 Factors Influencing Teachers' Use of Gamification

The factors influencing teachers' use of gamification are described in terms of 1) the factors that teachers choose to use gamification, and 2) the factors that teachers choose to use the type of game.

4.4.1 Factors in Teachers' Choices for Gamification

During the interviews, all three teachers agreed that using gamification in the primary school music curriculum was feasible, with both Teacher B and Teacher C acknowledging that the Beijing Municipal Bureau of Education also requires primary

school music teachers to use gamification in their music instruction. For the willingness to use gamification in the music classroom, all three teachers indicated that they were willing to use gamified teaching, but that they would consider whether to use gamified teaching in a particular music lesson depending on different factors. The three teachers considered the following factors in choosing to use gamification (Table 4.16).

Table 4.16 : The Different Factors That the Three Teachers Would Consider When Choosing to Use Gamification

	Status of students in lessons	Content of the lessons	Availability of time to prepare for the game	Availability of other teachers to sit in during the lesson
Teacher A	√	√	√	
Teacher B	√		√	√
Teacher C	√	√	√	

The state of the students in the classes taught was mentioned by the three teachers. The main considerations are the order of the class, the self-control of the students and the age of the students. Teacher A says she teaches Year 1 students who are younger and have a poor sense of rules, so she uses very little gamification in the first half of the school year and focuses more on developing students' sense of rules until the second half of Year 1 where she starts to include imitation games and body rhythm games. Teacher B says that although Year 2 students have some sense of rules, they still lack concentration and are easily drawn to things other than teaching. Teacher C felt that Year 3 students' awareness of rules and concentration increased with age, while their preference for the content of games was more pronounced and they preferred games with some difficulty, hence creative and rhythmic games were used more often (Table 4.17).

Table 4.17 : Learning Status of Students in Year 1–3 and Teachers' Preferences for the Type of Games

Learning states and preferences of games for Year 1–3		
Year 1	Younger grades and low awareness of rules.	Imitation games, body rhythm games
Year 2	Initial development of a sense of rules with a lack of concentration.	Role play games, body rhythm games
Year 3	Increased awareness of rules and concentration and enjoyment of games of some difficulty.	Creating games, rhythmic games

The content of the course was mentioned by two teachers. The lesson content in the music textbooks for Year 1–3 includes singing, listening, knowledge and skills and creative activities. Depending on the content, teachers consider whether to use a form of gamification and the specific type of game. For example, body rhythm games, role play games, imitation games and rhythm games are commonly used in music lessons for all types of content; song/lyric solitaire and creating games are more specific and are only used in singing lessons. Teacher C described:

> Depending on the content of the course, I will choose whether or not to use gamification, for example, for theoretical content I will reduce the use of games to create a theoretical learning atmosphere. (Teacher C, personal communication, April 27, 2022)

The availability of time to prepare games was mentioned by the three teachers. There are only three music teachers in the school with each teacher having 8, 16 and 15 40-minute lessons per week respectively (Table 4.18). Using Teacher C's weekly schedule as an example, in addition to teaching, teachers have several other workloads with at least two days in the week having a tighter work schedule (Table 4.19). The lack of professional training for teachers in gamification increases the difficulty of preparing lessons, with teachers reporting that it takes less than half an hour to prepare for non-gamification lessons and at least an hour to prepare for gamification, with

some game props taking at least a day or two to prepare (Table 4.20). The lack of professional training makes teachers separate the game from the teaching content when using the game. As an example, in the Year 1 singing lesson 'Little Bee', Teacher A used an animal imitation game to introduce the theme of the song, but instead of imitating a bee, she imitated tigers, cats, and dogs during the game. Although the game simulated students' interest, it blurred the theme of the lesson and made it difficult for the teacher to carry out the teaching task because the students were too excited that that they did not want to stop the game. The addition of the game did not support the teaching and learning, but rather interfered with the implementation of the lesson. Teachers reported that if they had more time, they would be more prepared to teach gamification, try new types of games and organise more challenging games, such as breakout games, and increase the number of games used in a lesson. If they did not have enough time to prepare, they would consider using fewer games, using more frequent and simple types of games, such as body rhythm games, or not using gamification.

Table 4.18 : The Number of Hours of Daily Work, the Total Number of Classes and the Total Number of Students of the Three Teachers

Teacher	Total Number of Classes Taught	Total Number of Students	Length of Each Lesson (Minutes)	Number of Lessons Per Week
Teacher A	4	120	40	8
Teacher B	8	240	40	16
Teacher C	9	270	40	15

Table 4.19 : Teacher C's Weekly Schedule

Teacher C: 6 music lessons in Year 3, 6 music lessons in Year 5, 3 music lessons in Year 6, and 1 music lesson for Year 5. Total of 16 lessons.					
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
8: 30					
9: 10	Year 3, Class 2				
10: 40	Year 3, Class 3	Year 5, Class 1			Year 5, Class 3 Psychology Lesson
11: 30	Year 3, Class 1	Year 5, Class 2	Year 6, Class 2		Year 5, Class 1
Lunch break		Duty			Duty
14: 00		Year 5, Class 3	Year 6, Class 3	Year 3, Class 2	Year 5, Class 2
14: 50		Year 3, Class 3	Year 6, Class 1	Year 3, Class 1	Year 5, Class 3
14: 45		Happy Fitness	Happy Fitness		Happy Fitness

Table 4.20 : The Preparation Time Required by the Three Teachers to Prepare for Gamification and Non-Gamification Teaching and the average Length of Lesson Preparation

	Preparation time for non-gamification lessons	**Preparation time for gamification lessons**
Teacher A	Around 30 minutes	More than 1 hour
Teacher B	Less than 30 minutes	More than 1 hour
Teacher C	20 to 30 minutes	50 minutes to 1 hour
The average length of time	Around 30 minutes	Around 1 hour

Only Teacher B mentioned whether other teachers were observing the lessons. If there were other teachers observing her music lessons, she would first consider using gamified teaching, citing that it would make the class interesting and more effective. Teacher B described:

> If I had other teachers observing my classes, I would give priority to using game-based teaching because the atmosphere in a gamification classroom is more active and presents a better teaching effect... I also prioritise the use of gamification in my teaching presentations. (Teacher B, personal communication, April 26, 2022)

Overall, the three music teachers at the No. 2 Experimental Primary School in Beijing's Shijingshan District thought that using gamification was feasible, but their use in teaching would be based on four factors: students' learning status, the content of the lesson, the time spent on lesson preparation, and whether or not there were other teachers observing the lesson, in order to consider whether or not to use gamification as well as the types of games to be used and their level of difficulty.

4.4.2 Factors in Teachers' Choice of Game Types

The most common type of game used by the three teachers during the data collection period was body rhythm games. As to why body movement games were most often used, the three teachers said that they were convenient and flexible, and could be used as an introductory activity before teaching, as well as integrated into teaching to help students feel the melody and memorise the lyrics. Moreover, body movement games are less difficult to prepare, do not require additional props, and can be integrated into music lessons of different contents. For example, Teacher A described:

> I think the body rhythm game is very easy to use, there is no need to prepare other game props, and the game is low in difficulty, so students can quickly master it... The body rhythm game can be used in many ways, either to learn melodies or to memorise lyrics. (Teacher A, personal communication, April 25, 2022)

The types of games that were used least frequently by the three teachers during the lesson observations were quiz games, melody games and instrumental games, all of which were used only once. Quiz games were only used by Teacher A, who did not use quiz games as much because she felt that they were not only ineffective in supporting teaching and learning, but also disruptive to the classroom. Teacher B, who

used the melody game, thought that this type of game required a high level of musical knowledge from the students, and that the difficulty of the game reduced the students' interest in participating in the game, and could not achieve the purpose of enhancing the students' learning effect. The main reason for not using or not using instrumental games was that the school did not have many instruments available for students to use, and if they wanted to have all students had the chance to play, they would have to rotate in groups, which would be time-consuming and interfere with the rest of the lesson.

Teacher A described:

> I used the quiz game once, but didn't feel it was appropriate for Year 1 students ... Quiz games can make the class messy, with students answering very loudly for me to hear their answers and the class becoming very noisy. (Teacher A, personal communication, April 25, 2022)

Teacher B described:

> The melody game requires the students to be familiar with the melody of the song they are learning as well as recognise the musical notation of rests. Some students may find the game difficult and are reluctant to participate. (Teacher B, personal communication, April 26, 2022)

Teacher C described:

> The reason I don't use instrumental games is that the school does not have enough instruments for the students to use together, and playing in groups would take too long, including time for distributing and retrieving instruments, which would interfere with the rest of the lesson. (Teacher C, personal communication, April 27, 2022)

Of all the observations of the gamified music lessons collected, the only gamified teaching aids used in the school's music sessions were the accompaniment instruments.

The three teachers' responses to the question "Why are there no other props used in the gamification curriculum" led to three reasons. Firstly, there is a lot of volume in preparing the tools for the game as it depends on the lesson and the content of the game and the number of students. For example, if there are 30 students in the class, in addition to preparing props for each student, there is also the possibility of the props being damaged, so at least 40 props would need to be prepared, which would be very difficult for the teacher to create. The second reason is the low reusability of props. Teachers taught variable year-to-year at different year levels and were therefore unable to reuse prepared props the following year. Teacher C described:

> We teach different years each year, for example, this year I teach Year 3 and Year 5, and next year it will be Year 2... Although the content of the lessons is the same for the same year, different teachers use different teaching methods and therefore the props cannot be reused. (Teacher C, personal communication, April 27, 2022)

The third reason is the financial burden of purchasing props. As each teacher has a different teaching style and game set-up, the school does not have the funds to provide teachers with props, thus purchasing props can cause a financial burden if they use them frequently. For these reasons, even though the teachers in this school use gamification often, they rarely use props in their lessons (Figure 4.15).

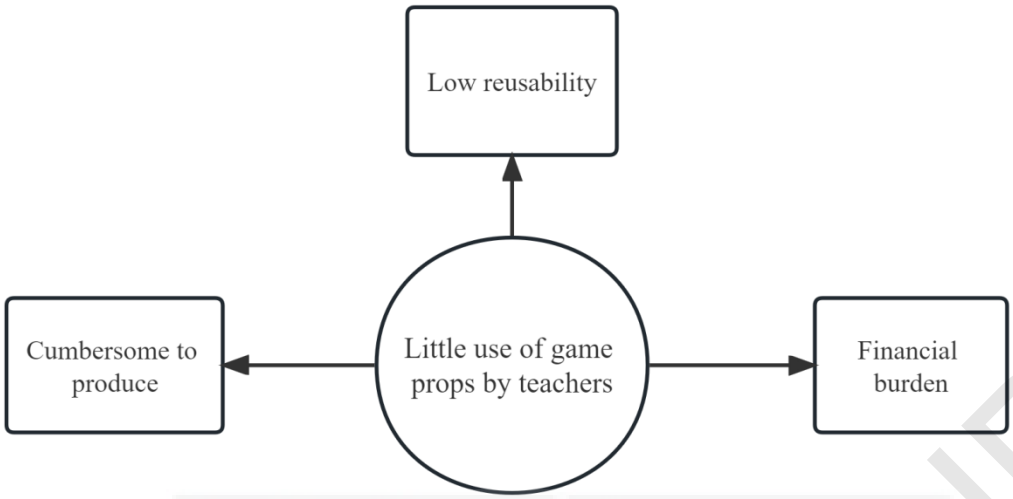

Figure 4.15 : Factors Influencing Teachers' Use of Gamification

In conclusion, teachers' choice of game types should firstly consider the flexibility and convenience of the game types in use, and secondly, they also need to consider factors such as whether the use of the game will affect the order of the classroom, whether the difficulty of the game matches the level of the students and whether the game materials are sufficient and easy to prepare.

4.5 Challenges When Using Gamification

During the course observations and interviews, the three music teachers at the school faced three main challenges in using gamification: 1) inadequate professional teaching skills among teachers; 2) inadequate facilities for teaching music; and 3) influence of lesson time on the effectiveness of teaching.

4.5.1 Inadequate Professional Teaching Skills among Teachers

During the observations and interviews, it was found that there were different levels of teaching ability among the school's music teachers due to a few reasons. Firstly,

there were no music teachers with a master's degree or above, and the average education of the three music teachers was a bachelor's degree, of which Teacher B's undergraduate major was dance, which is tangential to music teaching, and therefore it was difficult to ensure the quality of teaching in music lessons.

Secondly, as for the approach to improving gamification teaching skills, the three teachers said they mainly attended teacher training and seminars organised by the school, and occasionally by the Beijing Municipal Education Bureau, as well as observed the other teachers' classes. The frequency of teacher training organised by the school and the Education Bureau was about twice a term, but not all the training were related to gamified teaching. Apart from that, Teacher C indicated that she would take the initiative to participate in some academic exchange activities in order to increase her participation in training, while Teacher A and Teacher B indicated that they would not participate in training and exchange activities other than those organised by their school and the Education Bureau. Teacher C described:

> The school holds regular lectures and the Beijing Municipal Bureau of Education also organises training activities, although the number of times they are held in a semester is relatively less, only two or three times on average, so if the time is right, I also participate in activities on related topics on my own, such as teacher exchange activities. (Teacher C, personal communication, April 27, 2022)

Regarding why Teacher A and Teacher B did not want to participate in other training and exchange activities outside of school, Teacher A thought that participating in additional training and exchange activities would take away from the time she spent with her family, and that she did not want to spend extra money on some of the training

as she had to pay for participation. Teacher B said that she would like to participate in entertainment and recreational activities during her break time, and spend more time with her family, so she would not take the initiative to participate in training outside of school (Table 4.21).

Table 4.21 : Reasons for Teacher A and Teacher B's for Not Participating in External Training

Reasons for not attending outside school training	Spending time with family	Training fees	Time used to participate in entertainment activities
Teacher A	√	√	
Teacher B	√		√

Although all three teachers indicated that they were willing to use gamification and had some understanding of it, the main way to learn about it was through training and lectures organised by the school and mainly through theoretical training, which is the same as Zou (2020) and Liu (2021). Of the three teachers, only Teacher C voluntarily reviewed the literature on gamification and participated in relevant academic exchanges. A good music gamification lesson requires a teacher's basic teaching skills, both in terms of good music integration and the ability to combine teaching content with games, as well as the ability to coordinate and control the classroom, keeping an eye on changes in the classroom and adjusting the teaching plan quickly according to the changes. The lack of training makes it difficult for teachers to prepare lessons, which increases the time spent. At the same time, the need for teachers to improve their ability to use gamification relies on independent learning, which results with varying levels and ways of music teachers using gamification in a school.

4.5.2 Inadequate Facilities for Teaching Music

The inadequate configuration of music teaching directly affects the teachers' choice of types of games and the use of gamified teaching. The main deficiencies in the school's music teaching configuration are 1) the lack of a professional music classroom and 2) the insufficient number of accompaniment instruments available for students to use.

4.5.2.1 Inadequate Music Classroom Facilities

The school does not have a dedicated classroom as a venue for music teaching. All music lessons take place in the students' usual classrooms for other subjects. The classroom is equipped with a computer, a player, a projector, and a magnetic blackboard, but there is no piano or keyboard available in the classroom to use as an accompaniment instrument (Figure 4.16). There is very little space for games, as the classrooms are filled with students' desks and chairs. Furthermore, the students in Year 1–3 are under 10 years old, and movements are not encouraged for the safety of the students. This limits teachers' choice of games. For example, group games and role-play games, which require ample space for movement, are not chosen by teachers or are used with reduced numbers of participants. Secondly, there is only one electronic keyboard with limited volume output that teachers have to bring into the classroom, and this subsequently caused the teachers relying more on multimedia rather than live music accompaniment.

Figure 4.16 : Teacher B Teaching Music at Year 2 Classroom. (Photo: Wang Fang, 22/3/2022)

4.5.2.2 Insufficient Number of Accompanying Instruments

The school is equipped with accompaniment instruments that can be used by students, namely 2 triangles, 6 sand hammers, 2 twin tone blocks, 4 rattle boards and 2 tambourines (Table 4.22, Figure 4.17). Although the school has provided five musical instruments, the number is still inadequate to meet the needs of students. In addition, the wear and tear of musical instruments caused by prolonged use is another reason for the insufficient number of instruments in schools as there were more when the school first purchased them than there are now. The school did not replenish the damaged instruments with new ones, resulting in fewer and fewer accompaniment instruments available for the students.

Table 4.22 : Quantity of Various Types of Accompanying Instruments

Musical Instrument	Triangles	**Sand Hammer**	Twin Tone Block	Rattle Board	Tambourine
Quantity	2	6	2	4	2

Figure 4.17 : Accompaniment Instruments Provided by the No.2 Experimental Primary School in Shijingshan District, Beijing. (Photo: Wang Fang, 29/4/2022)

Teacher B said that she had organised students to make simple sand hammers using empty cans, but the students had different levels of manual skills and some of them could not make them well, resulting in sand stones from the sand hammers spilling into the classroom and affecting the classroom's environmental hygiene. At the same time, because of the lack of self-control of some students, they would play with the sand hammer during lessons in other subjects, which interfered with the teaching work of other teachers. Thus, Teacher B gave up the method of having students make their own musical instruments. Teacher B described:

> I have organised students to make sand hammers from empty cans, sand and gravel. Some students did very well, but others were not crafty enough and would spill sand and gravel inside the classroom every time they used their

> homemade sand hammers... I have also been told by teachers of other subjects that some students would use the sand hammer in other lessons, and it would affect the order of the class in other lessons, so I am no longer organising students to make their own instruments. (Teacher B, personal communication, April 26, 2022)

As a result, the insufficient number of accompaniment instruments available to students also affected the effectiveness of gamification. Students were distracted by long waiting times when taking turns to use their instruments. As there are different types of instruments, several students may compete to use the same instrument in class, increasing the teacher's workload in maintaining order. Consequently, although the teacher chose instrument games that meet the content and objectives of the lesson, the lack of instruments resulted in students not being able to use their instruments to their full potential and also led to disorder in the classroom, making the use of the games less effective than desired.

4.5.3 Influence of Lesson Time on the Effectiveness of Teaching

Students in all three classes of different age groups in the gamified instructional lessons showed a lack of concentration during the afternoon lessons. The percentage of distractions was higher in the afternoon lessons than in the morning lessons (Figure 4.18), although the percentage of distractions in afternoon gamification music sessions was lower than in non-gamification sessions (Figure 4.19 [as there are no non-gamification lessons in the afternoon music lessons in Year 3 during course observations, only Year 1–2 are presented]).

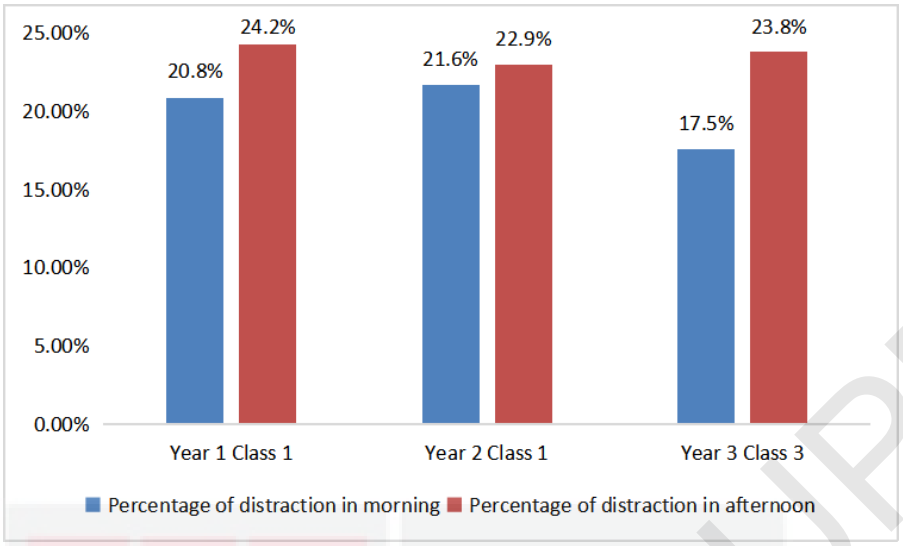

Figure 4.18 : Percentage of Students in Year 1–3 Distracted in the Morning Music Lessons and in the Afternoon Music Lessons Respectively

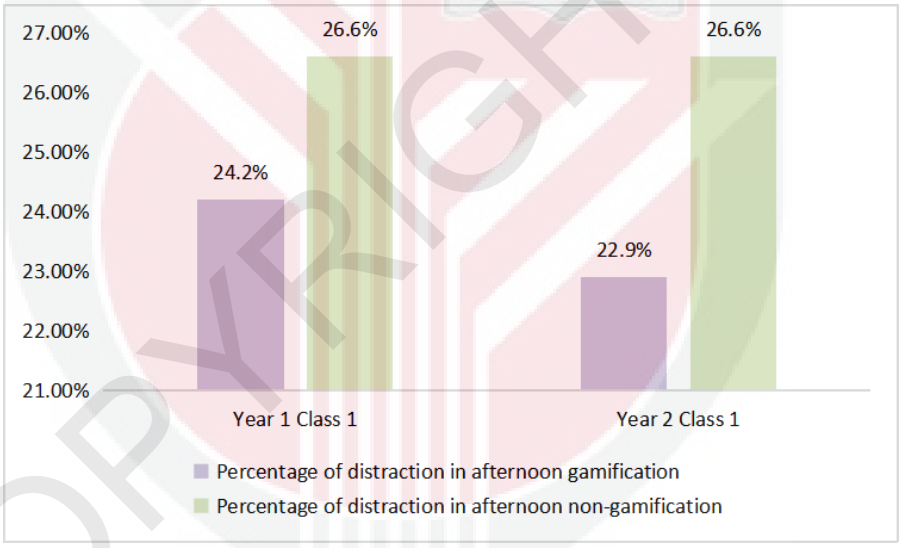

Figure 4.19 : Percentage of Students in Years 1–2 Who Were Distracted during Afternoon Gamification Lessons

4.6 Summary

Through data analysis, the current status of music teaching in the No. 2 Experimental Primary School in Shijingshan District, Beijing, has the following two aspects: 1) The timetable for music lessons at Year 1–3 is comparable to the timetable for other subject lessons; and 2) The teachers use gamification more often than traditional teaching in

music lessons. In the implementation of the gamification lessons: 1) although teachers used more types of games, the number of times each type was used was not even; 2) most of the games used by teachers were obtained through the Internet by learning from the games used by other teachers in their teaching, and a few of the games came from the teachers' independent creations; and 3) gamification teaching had a few chances of deteriorating the order of the classroom and increasing the number of times teachers had to maintain the order.

The development of the Gamification Effectiveness Assessment Form (Ma & Sui, 2010) to assess the effectiveness of teachers' gamification based on the theory of "Flow" (Csikszentmihalyi, 1975) and the psychological experience model of "Flow" (Massimini & Carli, 1988) found that gamified lessons that achieved effectiveness had the following characteristics: 1) Higher number of games with different types of games; 2) The games are of moderate difficulty and match the interests of the students; and 3) Singing lessons are more likely to achieve effective gamification.

Factors affecting teachers' use of gamification include: 1) choice of gamification: teachers consider the status of students in lessons, content of the lessons, availability of time to prepare for the game and availability of other teachers to sit in during the lesson; and 2) the type of game: the convenience of the game, whether classroom order will be disrupted and availability of game aids. Challenges faced by the teachers in using gamification include the following: 1) inadequate professional teaching skills of the teachers; 2) inadequate facilities for teaching music, including insufficient facilities in the music classroom and insufficient number of accompanying

instruments; and 3) the schedule of the afternoon lesson affects the effectiveness of the teaching and learning.

CHAPTER 5

DISCUSSION

This chapter discusses the current status of the use of games in music teaching in Year 1–3 at the No. 2 Experimental Primary School in Shijingshan District, Beijing and presents recommendations based on the findings.

5.1 Effectiveness of Game Types

During the course observation period, there were a total of 32 gamification in teaching music lessons using the following types of games: Role Play, Creating Games, Body Rhythm Games, Riddles, Quiz Games, Rhythm Games, Song/Lyrics Solitaire, Imitation Games, Breakout Games, Melody Games and Instrumental Accompaniment Games. The games collected were evaluated in relation to the four levels of game use in teaching and learning identified by Qiu (2011) (Table 5.1).

Table 5.1 : The Categorisation on the Types of Games Used by the Three Teachers according to the Four Levels of Games in Teaching

Level	Type of Game
First level: Games are for entertainment only and have nothing to do with learning.	No
Second level: Games can only briefly stimulate student interest.	Riddles (2 times); Melody Games (1 time)
Third level: Games initially develop students' social skills and have a few game teaching aids.	Role Play (6 times); Quiz Games (1 time); Breakout Games (5 times); Instrumental Accompaniment Games (1 time)
Fourth level: Games are integrated with teaching and learning, with teachers and students participating in the games together.	Body Rhythm Games (21 times); Creating Games (9 times); Imitation Games (5 times); Rhythm Games (2 times); Song/Lyrics Solitaire (2 times)

(Qiu, 2011)

Games that qualify for Level 2 include riddles and melody games. Games in this level incorporate a portion of the content, but can only excite students for a short period of time and cannot be used to teach content that requires a longer period of time.

The types of games that qualify for Level 3 are role play, quiz games, breakout games, and instrumental accompaniment games, which serve to initially develop students' social skills. Teachers provide simple game materials for students to use, but there are not many materials to use. The games were more often played between students and the teacher was less involved in the games.

The types of games that qualify for Level 4 are body rhythm games, song/lyrics solitaire, and imitation games, in which the teacher often participates in the game and plays with the students, and in which the teacher chooses the right level of difficulty and provides appropriate guidance to the students during the game to help them play better. The shortcomings of creating games are that the teacher often participates in the games with the students. The shortcomings of creating games and rhythm games are that they can only be used in a certain teaching content and are not compatible with all teaching contents.

Of all the types of games used by the teachers, none were categorised as Level 1 and all games used met the basis of being related to learning. Combining the rates of student-teacher interactions in both gamified and non-gamified teaching lessons, the use of gamified teaching had a positive effect on enhancing student-teacher interactions, also because the games unleashed the students' motivation (Zhao, 2008). The use of gamification had the effect of reducing the distraction rate even in the

afternoon lessons where students were more likely to be distracted. This shows that the games used by the teachers are suitable for use in teaching music.

5.2 Outcomes of Gamification

The outcomes of gamification are discussed in terms of teaching outcomes and learning outcomes.

5.2.1 Outcomes in Teaching

The current study found that the use of gamification in the teaching of music in primary schools does enhance the quality of lesson teaching and learning, as evidenced by the number of students who were distracted in lessons that used gamification was lower than the lessons that were not taught through gamification. This is consistent with Zhao (2008) and Wolfe (2020) that games can help students focus more on learning. On the contrary, this study also found that in addition to the positive effects of gamification on students' learning, it can also have negative effects. Specifically, the use of competitive games such as quiz games and breakout games resulted in students becoming overly excited and disorganised in the classroom, which increased the number of times the teacher had to maintain order and made it more difficult for the teacher to carry out his or her teaching duties. One possible explanation is that competition games overstimulate students' interest in participating in the game, causing them to become too excited to pay attention to the teacher's management. Based on these findings, the effects of gamification on music teaching are two-sided.

In addition, the timing of the lesson needs to be taken into account when using gamification. This study found that students are more likely to be distracted in the

afternoon music lessons, mainly because they are too excited near the end of the school day, and they are tired after a whole day of learning thus unable to focus on their studies. Therefore, if students were not interested in learning, teachers can use gamification to enhance the fun of the lesson. However, if students were in a state of excitement, it is not suitable for teachers to use gamification at this time, and participation in the game will make students become overly excited (Cai, 2018), which makes gamification teaching not only unable to assist, but also increase the difficulty of teaching.

5.2.2 Outcomes in Learning

During the course observation, the three teachers, regardless of the type of game used, conducted the game mostly by having students play in groups, also known as cooperative games (Smith & MacGregor, 1992; Tan, 2021; Wang, 1994). Compared to playing alone, cooperative games enhance the fun of the game and make students more active in learning through games (Li, 2021; Song, 2021), as shown in higher rate of teacher-student interaction in gamified lessons than that in non-gamified lessons. Moreover, group cooperation allows students with strong learning abilities to help weaker students (Li, 2021). For example, in the Year 1 listening programme "The Kitten Who Danced the Round Dance", five students encouraged a student in the group who was shy to participate in the dance.

The use of gamification achieved the effect of deep learning for students (Chen, 2022; Wan, 2022; Wang, 2022; Yan, 2022), which was mainly reflected in the creation game. For example, in the Year 2 singing lesson "A Pair of Good Friends", the teacher organised a lyrics creation game (Wan, 2022), allowing students to start by adding

their own friends to the lyrics of the song, and then encouraging them to think differently about what else is a pair of good friends in their lives, such as a table and a chair, and a toothbrush and toothpaste. Gamification allows students to develop their thinking skills while learning the song through play.

5.3 Recommendation on Gamification in Music Education

Based on the current situation, factors and challenges in the use gamification music teaching in Beijing Shijingshan No.2 Experimental Primary School in this study, the following suggestions are made: 1) strengthen the music teachers' ability to teach using gamification, 2) select suitable teaching content and 3) flexible use of game teaching aids.

5.3.1 Strengthen the Music Teachers' Ability to Teach Using Gamification

During the data collection process, the main way in which the three teachers improved their skills in music gamification teaching was by attending training organised by their school or the Board of Education. However, the traditional training did not fully meet the teachers' needs and therefore the training could have been richer in terms of content and form.

5.3.1.1 Age-Specific Development for Individuality

Music teachers at different stages of their careers have different needs for advancement. To improve the effectiveness of primary school music teacher training, attention needs to be paid to the growing needs of music teachers (Liu, 2021). When conducting teacher training, it is necessary to divide the training batches according to

the teaching age of teachers, to separate young teachers from the older teachers, and to develop different training programmes according to their different teaching development needs. This might have prevented the poor participation of teachers in training when organising teaching and research activities.

Teacher C, who has been teaching for five years, is a young teacher with active and innovative ideas but lacks some teaching experience compared to the other two teachers. For teachers A and B, who have been teaching for more than 20 years, they have developed fixed teaching ideas and teaching patterns and new ideas will help to stimulate their teaching design. Therefore, the younger teachers may be able to ask the older teachers for advice on their teaching experience, while the older teachers can share their experience with the younger teachers and learn from the younger teachers' innovative ideas through knowledge exchange.

5.3.1.2 Enrichment of Training Formats

In teaching training, in addition to using traditional offline lecture training methods, schools can also encourage teachers to use online training websites to enrich teacher training. This not only meets the different training content needs of teachers, but also reduces the difficulty of organising teaching and research activities and enhances the flexibility and effectiveness of teacher training.

For example, using the Beijing Teachers' Learning Network (bjteachers.cn) developed by the Beijing Institute of Education, which contains a wealth of training content categorized according to different subjects, teachers can use it for free and independently based on their interest, need and time. Teaching and research activities

can also be organised through a combination of online and offline training, so that there is no need to over-arrange the venue for teaching and research activities, and music teachers can communicate and exchange teaching concepts for the purpose of mutual learning. (Liu, 2021; Yang, 2018).

5.3.2 Select Suitable Teaching Content

To address the problem of students being easily distracted in the afternoon lessons, teachers can choose appropriate content for the time of day, placing content that requires more concentration and control in the morning lessons. Singing lessons (for example, Year 3 singing lesson "Motherland, Motherland, We Love You") and music knowledge and skills lessons (for example, Year 1 knowledge and skills lesson "High and Low Tones") which require students to focus more on the content and to be able to follow the teacher's progress are more appropriate for the morning session.

In the afternoon, lessons with less content and a higher degree of student participation, such as listening lessons (Year 2 listening lesson "Gavotte") can help students to focus in the class. Teachers should take into account the learning characteristics of their pupils when preparing lessons, so that the timing of the lessons does not interfere with their teaching to the greatest extent possible.

When using gamification teaching, teachers should take into full consideration the personality characteristics of students in different classes and choose appropriate types of games, so that gamification teaching can play a positive rather than a negative role in teaching. For example, in the Year 1 listening lesson "The Kitten Who Dances the Round Dance" [跳圆舞曲的小猫], the teaching objectives of the lesson were to

familiarise with the melody of the song and to recognise the round dance. However, the teacher used a lyrics creating game in the selection of the game type, and the lyrics are not the teaching content of this lesson, and subsequently this game did not achieve the teaching objectives of this lesson, and the use of this game was invalid. The lyrics creating game can be replaced with a dance creating game, and before playing the game, the teacher may show the students the dance video of the round dance song, guide the students to create new movements, and let the students familiarise the round dance song through this game.

For the same curriculum content, in classes with strong control, teachers could choose more group games to give students more space and time to play; in classes with poor control, they could choose creating games, allowing students to design their own games and inviting over-active students to demonstrate and encourage them to enhance their awareness of rules. Teachers can set up reward mechanisms, such as making score cards so that students who perform well in each class get points stamped by the teacher after class, and accumulation of a certain number of points can be exchanged for prizes or other benefits from the teacher in order to promote students' control in the classroom positively.

5.3.3 Flexible Use of Game Teaching Aids

Game teaching aids may to a certain extent enhance the teaching effect of music courses and enrich the form of the game. For example, when teachers use the role play game, teachers can prepare cards according to the story roles and let the students wear the cards on their bodies when they participate in the game to help them distinguish the roles and make them more devoted in their interpretation.

Inadequate teaching aids were one of the challenges faced by the teachers in this study when using gamification, and the students in Year 1–3 were too young to be involved in the production of teaching aids for the games. In the absence of teaching aids and insufficient number of accompanying musical instruments, teachers could choose to use some of the students' learning materials as game aids. For example, teachers could guide students to use their own cups, pens, and rulers as musical instruments to make different sounds by striking different items, or teachers could guide students to use their bodies to make different sounds by clapping their hands and stomping their feet to participate in the game.

5.4 Summary

In conclusion, most of the game types used by the teachers were relatively suitable in terms of difficulty and integration with the content, with only a small number of games mismatched with the teaching objectives. In addition to the positive effect of gamification on music teaching to help students focus on learning, the use of games may instead increase the number of times teachers have to maintain order in the classroom and enhance the difficulty of teaching when students are themselves in a state of excitement. Based on the challenges teachers in the study faced in gamification teaching, the training teachers attended could have different contents depending on the age of the teachers, as well as enriching the way teachers attended the training. Teachers could choose the appropriate content and whether or not to use gamification in their teaching, depending on the time of the lesson and the characteristics of the students in the class they are teaching. In case of a lack of musical instruments, teachers could choose to use other objects or guide students to make sounds through

their bodies instead of musical instruments to participate in the gamification of teaching.

CHAPTER 6

CONCLUSION

This chapter provides overall conclusions of this study and suggests some directions and recommendations for future research.

6.1.1 Summary of the Study

The study of the current situation of music gamification teaching in Year 1–3 of the No. 2 Experimental Primary School in Shijingshan District, Beijing can be divided into the following stages, in which data collection is continuously carried out and data were collated and analysed to discover the current situation and problems in music gamification teaching.

This study began in April 2021. In the first phase, A pre-study visit to the primary school selected for the study was then conducted to determine the specific research design and the research and data collection methods to be used and the instruments for data collection.

In the second phase, an 8-week data collection was conducted at school March to April 2021. The current situation of music teaching and the use of gamified music teaching in the school was collected through the observation of music lessons in each class of Year 1–3 and interviews with three music teachers in the primary school. There were 47 lesson observation records, including 32 gamified music lessons and 15 non-gamified music lessons as well as 2 rounds of teacher interviews.

In the third phase, the data collected was analysed and discussed, and it was found that the teachers of Beijing No. 2 Experimental Primary School, Year 1–3, used gamification in music teaching more frequently and used a wider variety of total games. The effectiveness of all music gamification sessions was assessed based on the "Flow" theory, which evaluated the effectiveness of three teachers' gamification teaching in terms of seven dimensions: the rate of teacher-student interaction, the number of student distractions, the number of games used in a single session, whether the game had a clear goal, whether there were rules for the game, whether the students voluntarily participated in the game, and whether the teacher had an evaluation at the end of the game. The results indicated that music teachers were less effective in using gamification in their schools, with most gamified lessons only partially meeting the evaluation criteria. One lesson from each of the three teachers who achieved effective gamified teaching was selected as an example and analysed in terms of the teaching process and the use of games.

Previous research has focused more on the positive effects of gamification in primary school music teaching, and less on the challenges faced by teachers. This study agrees with some researchers who have argued that the lack of professional music teaching equipment in schools and the lack of interest or excitement of students in the classroom can affect teachers' teaching. On top of this, this study found that the timing of lessons also affects students' learning behaviour in the classroom, which in turn affects teachers' effectiveness. In addition, although gamification brings positive effects on teachers and students teaching, this study also found that the use of gamification led to disruptions in some classrooms, which in turn made teachers' work more difficult.

Before deciding whether to use gamification for teaching and the type of game, teachers would consider the position of the students in the classroom, the content of the lessons, the time spent on lesson preparation, and whether there were other teachers sitting in the classroom. In addition to this, teachers faced some challenges in using gamification for teaching and learning, such as lack of training for teachers in teaching skills, lack of professional music facilities in schools, and the timing of lessons in the morning or afternoon. Based on the findings of this study on the factors affecting teachers' use of gamification and the challenges teachers face when using gamification some recommendations are made: 1) enhancement of teachers' professional training in teaching, 2) selection of the use of gamification based on the appropriate content to be taught, and 3) flexibility in the use of other items as teaching aids for music games.

The use of games in the music classroom is not compulsory, and requires music teachers to be able to consider whether to use games according to the content of the teaching, so that games can really become a means of learning music, and thus make better use of gamification to enhance the effectiveness of teaching.

6.2 Recommendations for Future Research

In future research, the study could be expanded to include data collection at different primary schools in Beijing; a more in-depth study could be conducted on the impact of class time on student learning outcomes to explore whether there are factors other than fatigue and excitement near the end of the school day that cause students to be more easily distracted in their studies, and to look for ways to help students concentrate better to enhance teachers' gamification of teaching effectiveness.

Students' views on teacher training can be collected, for example, by conducting relevant interviews with students and exploring through their perceptions whether teachers' participation in training has a directly impact on their music learning. Some of the negative impacts of gamification need to be explored more in the future to see what difficulties these negative impacts cause to teachers' teaching work, and to investigate if it is a common phenomenon and find solutions or mitigating measures towards a more successful gamification teaching and learning.

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APPENDICES

Appendix A

Data Information of 47 Music Lessons

No.	Year	Teacher	Name of the Lesson	Use of Gamification	Game(s) Used by Teachers
1	Year 1	Teacher A	Singing lesson "The Grassland is My Home" [草原就是我的家]	Yes	Body Rhythm Game
2	Year 1	Teacher A	Singing lesson "The Yi Children are So Happy" [彝家娃娃真幸福]	Yes	Rhythm Game
3	Year 1	Teacher A	Listening lesson "One Master, Three Apprentices" [一个师傅仨徒弟]	Yes	Role Play Game; Body Rhythm Game
4	Year 1	Teacher A	Singing Lesson "Two Little Elephants" [两只小象]	Yes	Role Play Game; Lyrics Creating Game
5	Year 1	Teacher A	Listening lesson "The Kitten Who Danced the Round Dance" [跳圆舞曲的小猫]	Yes	Body Rhythm Game ; Lyrics Creating Game
6	Year 1	Teacher A	Singing lesson "Little Bee" [小蜜蜂]	Yes	Imitation Game; Song Solitaire; Lyrics Creating Game
7	Year 1	Teacher A	Singing lesson "Bugu" [布谷]	Yes	Body Rhythm Game
8	Year 1	Teacher A	Listening lesson "Train Polka" [火车波尔卡]	Yes	Imitation Game； Breakout Game
9	Year 1	Teacher A	Singing class "The Painter" [粉刷匠]	Yes	Riddle； Body Rhythm Game
10	Year 1	Teacher A	Knowledge and Skills Lesson	Yes	Role Play Game; Breakout Game

			“Pitch” [音的高低]		
11	Year 1	Teacher A	Singing lesson “Tujia Children are So Happy” [土家娃娃真幸福]	Yes	Breakout Game; Body Rhythm Game
12	Year 1	Teacher A	Singing lesson “Twinkle, Twinkle, Little Star” [闪烁的小星星]	No	No
13	Year 1	Teacher A	Singing lesson “French Horns” [法国号]	No	No
14	Year 1	Teacher A	Singing Lesson “Counting Ducks” [数鸭子]	No	No
15	Year 1	Teacher A	Singing lesson “Time is Like a Pony Cart” [时间像小马车]	No	No
16	Year 1	Teacher A	Singing lesson “The Barber” [理发师]	No	No
17	Year 2	Teacher B	Singing Lesson “Golden Peacock, Dance Softly” [金孔雀，轻轻跳]	Yes	Body Rhythm Game
18	Year 2	Teacher B	Singing lesson “The Crab Song” [螃蟹歌]	Yes	Body Rhythm Game
19	Year 2	Teacher B	Singing lesson “Rustling in the Rain” [小雨沙沙沙]	Yes	Quiz Game
20	Year 2	Teacher B	Singing lesson “Little Animals Sing” [小动物唱歌]	Yes	Lyrics Creating Game; Instrumental Accompaniments
21	Year 2	Teacher B	Singing lesson “Harilo” [哈里啰]	Yes	Body Rhythm Game
22	Year 2	Teacher B	Singing lessons “A Pair of Good Friends” [一对好朋友]	Yes	Body Rhythm Game ; Imitation Game；

					Lyrics Creating Game
23	Year 2	Teacher B	Listening lesson “Gavotte” [加伏特舞曲]	Yes	Body Rhythm Game ; Dance Creating Game
24	Year 2	Teacher B	Listening lesson “The Three Little Pigs” [三只小猪]	Yes	Body Rhythm Game
25	Year 2	Teacher B	Singing Lesson “Spring is Coming” [春天来了]	Yes	Body Rhythm Game ; Lyrics Creating Game
26	Year 2	Teacher B	Singing lesson “Outing” [郊游]	No	No
27	Year 2	Teacher B	Singing lesson “Lullaby” [摇篮曲]	No	No
28	Year 2	Teacher B	Singing lessons “Flower Slap” [打花巴掌]	No	No
29	Year 2	Teacher B	Singing lesson “Newspaper Selling Song” [卖报歌]	No	No
30	Year 2	Teacher B	Singing class “Communist Children’s League Song” [共产儿童团歌]	No	No
31	Year 2	Teacher B	Listening lesson “Ducks in a Row” [鸭子拌嘴]	No	No
32	Year 3	Teacher C	Singing lesson “My Home on the Grassland” [草原我的家]	Yes	Imitation Game; Breakout Game
33	Year 3	Teacher C	Singing lesson “Naughty Cuckoo” [顽皮的杜鹃]	Yes	Body Rhythm Game
34	Year 3	Teacher C	Singing Lesson “Shipwrecking” [摇船调]	Yes	Riddle; Body Rhythm Game; Role Play Game
35	Year 3	Teacher C	Singing lesson “Motherland, Motherland I Love	Yes	Rhythm Game; Body Rhythm Game;

			You" [祖国祖国我爱你]		Lyrics Creating Game
36	Year 3	Teacher C	Singing Lesson "Shearing" [剪羊毛]	Yes	Body Rhythm Game
37	Year 3	Teacher C	Singing lesson "I'm a Little Musician" [我是小音乐家]	Yes	Lyrics Creating Game; Melody Game
38	Year 3	Teacher C	Singing lesson "Kobarang, the Sun of Childhood" [小巴郎，童年的太阳]	Yes	Body Rhythm Game
39	Year 3	Teacher C	Singing lessons "Fear Not Resistance" [只怕不抵抗]	Yes	Breakout Game
40	Year 3	Teacher C	Listening lesson "Musical Bells in Vienna" [维也纳的音乐钟]	Yes	Role Play Game
41	Year 3	Teacher C	Singing lesson "The Ballad of Malan" [马兰谣]	Yes	Song Solitaire Game
42	Year 3	Teacher C	Listening lesson "Hide and Seek" [捉迷藏]	Yes	Body Rhythm Game
43	Year 3	Teacher C	Listening lesson "Ping Pong Variations" [乒乓变奏曲]	Yes	Imitation Game; Breakout Game
44	Year 3	Teacher C	Listening lesson "Horse Racing" [赛马]	No	No
45	Year 3	Teacher C	Singing lesson "Spring Dawn" [春晓]	No	No
46	Year 3	Teacher C	**Singing Lesson "Little Crow Loves Mummy" [小乌鸦爱妈妈]**	No	No
47	Year 3	Teacher C	Listening lesson "Liu Yang River" [浏阳河]	No	No

BIODATA OF STUDENT

Wang Fang is a master's student, specializing in music education. Her current research focuses on the implementation of gamification teaching in music teaching in primary schools in Beijing, especially the positive and negative effects of gamification teaching on teachers' teaching.

Before her postgraduate study, Wang Fang had an internship in four kindergartens in Beijing, mainly focusing on early childhood music education. She holds a bachelor's degree in preschool education from China Women's University.

Wang Fang loves music from an early age. She studied flute from year 2 to year 6 in primary school. She studied piano and Chinese national dance from high school. She was also very interested in pop music singing.

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PUBLICATION

Fang, W., Chieng, J., & Chiat, L. F. (2023). Gamification of Music Lessons and Factors Affecting its Use in Private Kindergartens in Beijing. *International Journal of Academic Research in Progressive Education and Development, 12(3),* 1215-1230. http://dx.doi.org/10.6007/IJARPED/v12-i3/19437