

MUSIC-BASED LANGUAGE PROGRAMME TEACHER TRAINING ON PRESCHOOL TEACHERS' MUSIC TEACHING SELF-EFFICACY AND DELIVERY PERFORMANCE: A CASE STUDY

TeeNa Sim¹, Julia Lee Ai Cheng²

Learning Sciences, Faculty of Cognitive Sciences and Human Development, Universiti Malaysia Sarawak, Kota Samarahan, Malaysia^{1,2}

teenasim1213@hotmail.com¹, aclee@unimas.my²

*Corresponding author

Published: 30 April 2024

To cite this article (APA): Sim, T., & Lee, J. A. C. (2024). Music-based language programme teacher training on preschool teachers' music teaching self-efficacy and delivery performance: A case study. *Southeast Asia Early Childhood Journal*, 13(1), 133–151. <https://doi.org/10.37134/saecj.vol13.1.9.2024>

To link to this article: <https://doi.org/10.37134/saecj.vol13.1.9.2024>

ABSTRACT

Music substantially impacts early childhood development, especially language development, yet early childhood policies rarely emphasise the role of music in early learning and engagement. Research shows that effective delivery of early childhood music programmes depends on teachers' music knowledge, skills, and music teaching self-efficacy, which may be enhanced through teacher training. However, little is known about the training details and preparation of non-music specialist preschool teachers who use music to teach. The present study sought to determine whether music-based language programme (MBLP[®]) teacher training could improve the music teaching self-efficacy of non-music specialist preschool teachers and their MBLP[®] delivery in an inclusive preschool classroom. The 14 training sessions consist of a briefing, a workshop, a practicum, interactive reflections, and observations. Three non-music-specialist preschool teachers were trained to deliver MBLP[®] lessons to nine preschoolers aged 33 to 47 months. The within-subjects design investigated the teachers' self-efficacy in music teaching, while the single-subject design tracked their MBLP[®] lesson delivery performance. Data was collected using a self-reported music background survey, pre-, mid-, and post-test music teaching self-efficacy, teachers' feedback, and MBLP[®] lesson observations. The results showed that the training increased music teaching self-efficacy by 10 to 46% and revealed a positive relationship between practicum with interactive reflections and lesson delivery performance. The findings suggest that providing MBLP[®] training to non-specialist preschool teachers could help address language developmental issues in inclusive preschool settings.

Keywords: music-based language programme, preschoolers, music teaching self-efficacy, teacher training, practicum, interactive reflection

INTRODUCTION

Music plays a significant role in early childhood development (Bautista et al., 2022; Ilari, 2020; Ruokonen et al., 2021). Reasons for this may be attributed to the multisensory nature of music (Grau-Sánchez et al., 2022; Jaschke, 2019). Therefore, a structured musical experience can be extrapolated to other curricular areas and applied to other aspects of young children's lives, such as language development (Pitt, 2019; Politimou et al., 2019), beyond mere artistic music skill development (Barrett et al., 2022; Ruokonen et al., 2021).

The developmental role of music in early learning and engagement, nonetheless, is inadequately emphasised in official early childhood policies worldwide (Barrett et al., 2019; Hallam, 2017). Studies such as those from the United States (Baum, 2017), Brazil (Ilari, 2007), Turkey (Burak, 2019), Hong Kong (Lau & Grieshaber, 2018), and Australia (Pestana, 2022) have shown that early childhood educators need more preparation to introduce intentional music-making to preschoolers.

Inadequate music knowledge and skills, whether in the preparation of pre-service early childhood educators or professional development for in-service preschool teachers, have severe repercussions for teachers and young children (Bautista et al., 2022; Welch, 2020). Firstly, teachers' confidence and self-efficacy beliefs are notably affected, causing them to feel insecure and anxious while conducting music-making activities with young children (Burak, 2019). Secondly, music is not taught competently and appropriately (Valdebenito & Almonaci-Fierro, 2022). Thirdly, teachers often overlook the importance of music for child development and learning, allocating little time to it (Barry & Durham, 2017; Baum, 2017). These teacher-related issues may negatively impact young children's development and learning when preschoolers' cognitive functions and auditory and perceptual skills are best developed during the early years (Bautista et al., 2022).

Music knowledge, skills, and music-teaching self-efficacy are crucial for successful music-making delivery (Biasutti et al., 2021; Burak, 2019). Positive relationships have been discovered between the provision of training to non-music specialists primary school teachers and the successful delivery of music teaching (Ibbotson & See, 2020; Thorn & Brasche, 2020). Studies highlight the need to provide non-music specialists with effective ongoing training and support to develop their music knowledge, skills, and confidence (e.g., Barrett, Zhukov, & Welch, 2019; Bautista, Toh, & Wong, 2016). Moreover, little is known about contemporary early childhood educators' training in using music as an effective teaching tool (Barrett et al., 2019; Kirby et al., 2022).

In Malaysia, music is merely one of the creative activities in childcare and early education courses. Preschool teachers are primarily non-music specialists, they face challenges due to a lack of musical knowledge, skills, and support for the effective delivery of music-making activities (Augustine & Wong, 2016; Chan & Kwan, 2010). To the author's knowledge, a localised music-based language programme with teacher training has yet to be successfully implemented. Furthermore, no study has documented how workshop, practicum, interactive reflections, and observations may support non-music specialist preschool teachers' confidence and competence in music-making delivery. The present study aims to address these gaps by implementing a localised music-based language programme with teacher training.

The music-based language programme (MBLP[®]) is an eclectic early childhood music approach founded on Orff, Kodály, and Dalcroze, designed to improve preschoolers' language skills through various music-making activities. It was designed by the first author (TS¹) for inclusive practice classrooms for preschoolers with and without language delays or at risk of language difficulties. The MBLP[®] is empirically informed by past research findings (Barrett et al., 2022; Bolduc & Lefebvre, 2012; Pitts, 2016), framed by Patel's OPERA hypothesis (2011, 2014), aligned with Malaysia's PERMATA National Curriculum principles of learning through

¹ TS is a certified music teacher in Yamaha Music Courses, Orff, Suzuki, and Musicgarten music approaches and trained in the Kodály and Dalcroze approaches.

play, and whose feasibility and acceptability were determined by the preceding pilot trial (Sim & Lee, 2023).

The study is a subset of this newly developed MBLP[®] research. The potential effects of MBLP[®] teacher training were examined through the following research questions:

- i) What is the difference in teachers' music teaching self-efficacy before, during, and after the MBLP[®] teacher training?
- ii) What are the teachers' perceptions and engagement with MBLP[®] teacher training?
- iii) How well does the MBLP[®] teacher training support the teachers' delivery performance?

METHODOLOGY

Research Design

The MBLP[®] teacher training was designed as part of a single group pre-post design to examine the effect of MBLP[®] on the preschoolers' language enhancement. In this paper, findings from the changes in music teaching self-efficacy, teachers' perceptions and engagement with the study, and the delivery performance of these non-music specialist preschool teachers ($n = 3$) are reported.

The study employed a within-subject design to investigate teachers' self-efficacy in music teaching before, during, and after teacher training through the Google Form Questionnaire. A single-subject design was employed to monitor the MBLP[®] delivery performance during and after the practicum through observation with the MBLP[®] delivery performance observation scale. In line with the characteristics of single-subject design, each teacher served as her own control by taking part in two phases (Kratochwill & Levin, 2014).

Given that the teachers were non-music specialists and had never taught a 30-minute lesson with a series of music-making activities before, no observation data could be collected prior to the practicum to serve as the baseline of this single-subject study on MBLP[®] delivery performance. Thus, the comparison phase began with the delivery of the first three MBLP[®] lessons as teaching practices during practicum after the workshop, referred to as the During Practicum (DP) Phase. Subsequently, the second condition is to deliver the MBLP[®] lessons following the practicum, which is known as the After Practicum (AP) Phase. The AB design for three teachers was justified as appropriate to evaluate the influence of MBLP[®] teacher training on lesson delivery performance due to its carry-over effects (Krasny-Pacini & Evans, 2018).

This study uses single-subject studies to experimentally examine the effects of an intervention, the MBLP[®] teacher training programme (Kratochwill & Levin, 2014). The intervention includes workshops, practicums, interactive reflections and observations. This approach allows non-music specialists to receive in-house music pedagogy training for preschoolers with and without language delays (Horner et al., 2005). It also monitors teacher training's impact on lesson delivery (Byiers et al., 2012) and provides interactive suggestions

based on teachers' feedback. The immediate interactive reflection after each delivery effectively may facilitate the teachers' teaching and learning continuously.

Recruitment and Participants

The study used a non-probability-purposive sampling recruitment strategy due to the COVID-19 pandemic and the closures of most preschools and nurseries. TS surveyed preschool principals in Kuching District, Sarawak, Malaysia, and identified children with language delays in their early childhood care centres. Preschool A was the most receptive, offering classes to young children aged 33 to 60 months and adhering to standard operating procedures to ensure the health of both children and teachers during the pandemic. Preschool A, which is a play-based preschool, follows the Australian National Framework and Malaysia PERMATA National Curriculum with trilingual language teaching.

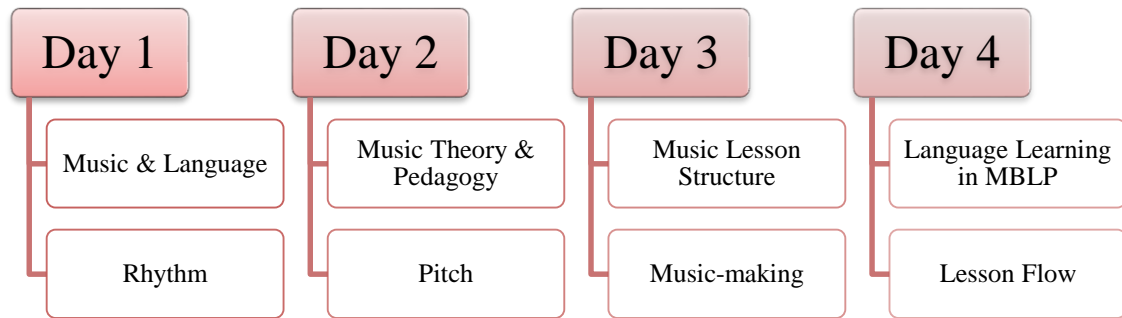
The participants included three female early childhood educators: a teacher assistant (T1), an administrator (T2), and a classroom teacher (T3); nine preschoolers (including four preschoolers with language delay identified using the New Reynell Developmental Language Scale assessment; five boys and four girls); and their parents.

MPLP[®] Teacher Training Programme

MBLP[®] teacher training is grounded in Bandura's social cognitive theory. Thus, the programme emphasises attitude and belief, music knowledge and skills, pedagogy, practicum, and interactive reflection. Strengthening these components was expected to boost teachers' music teaching self-efficacy and delivery.

The MBLP[®] teacher training was conducted in English in the preschool from March 21 to June 15, 2022. The training comprised 14 sessions, covering essential musical knowledge, skills, and pedagogy through the following sub-components:

- The briefing introduced the MBLP[®] and assessed teachers' music backgrounds, perceptions of music's role in preschoolers' language development, and self-efficacy.
- The 4-day workshop focused on providing teaching skills, inviting active participation, and harmonising the MBLP[®] with the preschool curriculum (see Figure 1 and Appendix).
- Teachers were given observation items to emphasise intuitive and interactive learning. They observed their peers' teaching whenever they participated in the MBLP[®] lesson throughout the intervention.
- Model lesson plans offered a structured framework for engaging teachers and preschoolers in creative music-making activities. TS guided the practicum, which afforded teachers the opportunity to apply the knowledge and skills acquired during the workshop.
- The interactive reflection sessions were conducted after each lesson, wherein TS provided constructive feedback aimed at enhancing the teachers' theoretical and practical understanding of MBLP[®] lesson delivery.



Note. The workshop consisted of theoretical (upper row) and practical (lower row) sessions. The music-making activities comprised chanting, singing, solfège with hand signs, listening, dancing, and musical games.

Figure 1. The content of the 4-day workshop

Data Collection and Instruments

The Universiti Malaysia Sarawak Human Research Ethics Committee approved the study (HREC (NM)2020(1)/07). One week before the research began, preschool teachers and parents were briefed, and informed consent was obtained. Parental notification letters provided an explanation of the research goal, methodology, and consent process.

The study's outcome measures were teachers' music teaching self-efficacy, perceptions and engagement, and MBLP[®] lesson delivery performance. The data were gathered using self-reporting Google Forms, attendance records, and observations of each MBLP[®] session. The instruments included Teacher Training Questionnaires, feedback forms, and an MBLP[®] delivery performance observation scale.

Teacher Training Questionnaires (TTQ)

The TTQ was an adapted version of the Music Background Survey and Music Teaching Self-Efficacy Questionnaire developed by Vannatta-Hall (2010). The TTQ comprised five sections: Sections 1 to 3 gathered demographic information only for the pre-test; Sections 4 and 5 focused on music teaching self-efficacy (MTSE) and teacher training expectations and feedback.

Section 1: name, gender, age, academic qualifications, profession, teaching experience, and English communication fluency; Section 2: four closed-ended questions about preschoolers' language concerns; Section 3: five closed-ended and one open-ended music profile questions; Section 4: 38 items about music teaching self-efficacy: closed-ended questions on confidence in music skills (1–17), music teaching (18–27), music integration (28–31), overall confidence (32–36), and two open-ended questions about classroom instruments and preschool music; and Section 5: five closed-ended items about the expectations or feedback of MBLP[®] teacher training.

Sections 3 and 5 employed a 7-point Likert scale from 0 to 6: extremely not, very not, somewhat not, neutral, somewhat, very, and extremely. Teachers ranked their efficacy opinions for Section 4 items on an 11-point scale from 0% to 100%. The scale ranged from 0% to 100% confidence in 10-unit increments. If the teachers' confidence lies somewhere in between, they

may check the percentage that matches their confidence. An 11-point scale is supposed to predict performance better than a 5- or 7-point scale since it provides more information (Bandura, 2006; Xu & Leung, 2018).

Feedback forms

The teachers' feedback, which included five aspects: effort, comprehension, practicality, satisfaction, and recommendation level, was collected via the TTQ (Section 5 on the mid- and post-test) and feedback forms after the workshop. The feedback forms comprised 12 items: 10 close-ended and two open-ended questions. The close-ended questions included the level of effort to attend the workshop (item 1), level of comprehension (items 2–5), and level of satisfaction with the workshop content (items 6–10), while the open-ended questions included expressing the value of attending the workshop and suggestions to improve the workshop (items 11–12). The five-point Likert scale was used in the first 10 items, ranging from 1 to 5: poor, fair, satisfactory, very good, and excellent. The scores were transformed into percentages as a standard scale.

MBLP[®] Delivery Performance Observation Scale

The MBLP[®] Delivery Performance Observation Scale assessed the teachers' lesson plan adherence and lesson quality. The lesson delivery adherence contained four items: lesson duration, music objective, language objective, and music-making activities, to determine if the lesson delivery had adhered to the lesson plan. Meanwhile, the quality of the lesson delivery was determined using nine items: material preparedness, familiarity, musical skills in pitch, rhythm, and dynamics, delivery strategy in the procedure, clear presentation, warm feedback, and encouraging active participation. All items were evaluated on a 9-point scale ranging in 0.25-unit intervals from 1 (very weak) to 3 (outstanding). The total scores were converted to percentages.

This observation was administered by TS and trained teachers as a second observer for 21.4% of all sessions. The Cronbach's alpha inter-rater reliability coefficients (including all adhering and quality items) were computed by SPSS version 27. They yielded an alpha coefficient of $\alpha = .85$, which indicated good inter-rater reliability.

Although the teacher training was conducted in English, the TTQ, feedback, and interactive reflection sessions were briefed in Chinese, and the observation indicators were translated into Chinese for T1, who is Chinese-educated. The TTQ data were collected via Google Form at three timepoints: pre-training (during the briefing), mid-training (after practicum), and post-intervention (after the last MBLP[®] lesson).

Feedback via Google Form was reported after the workshop. The observation of the MBLP[®] lesson delivery began with the lesson during practicum, followed by the lesson after practicum (see Figure 2).

Week 3		Week 4	Weeks 5–13	Week 14
Teacher Training			MBLP [®] Lesson	
Briefing	Workshop	Practicum Observation		
Pre-TTQ	Feedback	Mid-TTQ*		Post-TTQ*
		Interactive Reflection Sessions		
		MBLP [®] delivery performance monitoring		

Note. TTQ = Teacher Training Questionnaire. *Two open-ended questions for feedback were included.

Figure 2. Procedure of the data collection

Data Analysis

The data were analysed using quantitative descriptive and visual inspection techniques. The individual was used as a unit of analysis in a within-subject and single-subject research design.

The visual analysis of teachers' MBLP[®] delivery performance began with examining the data level, trend, and stability within each phase. The inspection was followed by examining the immediacy of the effect and the data overlap between the baseline and intervention phases. When changes in level are in the intended direction, immediate, discernible, and sustained across time, it is assumed that the changes in behaviour throughout phases are the product of the applied treatment and are indicative of improvement (Lobo et al., 2017). Furthermore, the percentage of nonoverlapping data (PND) was determined. A PND of 50 indicates no observed effect, a PND of 50–70 indicates a doubtful effect, and a PND of > 70 indicates that the intervention was effective (Scruggs & Mastropieri, 1998; Lobo et al., 2017).

The visual assessment was supplemented by a statistical analysis. When the visual analysis revealed a functional link (three demonstrations of the effectiveness of the intervention effect), quantitative analyses were carried out to determine the magnitude of the intervention effect. Hedges' *g* effect sizes were estimated using a standardised mean difference with correction for small sample sizes.

RESULTS

Participants Information

The teachers' information, including demographic characteristics and music background, is presented in Table 1 and discussed individually. All teachers participated until the end of the intervention. However, only T1 and T2 completed the full training², which included a briefing,

² T3 was diagnosed with COVID-19 after the first day of the workshop.

a 4-day workshop, and three sessions of practicum, interactive reflection and observation, respectively.

Table 1
Demographic characteristics of teachers and their perceptions of music's role in learning

Demographic characteristics	T1	T2	T3
Age	20	23	31
Gender	Female	Female	Female
Qualification	HS ^b + KAP ^a	BSc ^c + KAP	BSc ^d + KAP+
Profession	Teacher assistant	Administrator	Class teacher
Experience (year)	1	2	6
English fluency	Limited	Quite fluent	Quite fluent
Awareness of language delay in preschoolers	Moderate	Moderate	Moderate
Music training	None	1 year ^e	None
Music engagement	Daily	Weekly	Daily
Perception of music's role ^f			
Important	6	5	4
Useful	5	5	5
Difficult	6	4	2
Enjoyable	6	5	5
learnable	5	5	5

Note. ^a KAP = Kursus Asuhan Permata (Jewel childcare and early education course), a mandatory course for the early childcare and education workforce in Malaysia. ^b HS = high school. ^c BSc in Business Management. ^d BSc in Early Childhood Education. ^e attended violin class at 18 years old.

T1

T1, a 20-year-old Chinese vernacular high school graduate with limited English fluency and worked as a teacher assistant at the preschool for nearly a year, showing enthusiasm and caring towards young children. T1 acknowledged that language delays in preschoolers could lead to learning difficulties but was unsure of how to help. She reported that two out of five preschoolers were delayed in language development compared to their peers. T1 enjoyed listening to music and believed that music could be learned.

T2

T2, a 23-year-old English-speaking business graduate, worked as an administrative staff and teaching assistant when the teachers were unavailable at the preschool for two years. She is concerned about the language development of preschoolers with language delays. T2 studied violin at 18 and enjoys singing, believing it is easy to pick up and plays a significant role in childhood education.

T3

T3, a 31-year-old early childhood education graduate, is fluent in English and has worked at Preschool A for nearly six years. T3 is a mother of two and only worked part-time until 2:00 p.m. at the preschool. understands the importance of language development in preschoolers. Despite her lack of professional training in music, she enjoys listening to and dancing with preschoolers. She believes that music can positively influence early childhood education and learning music is relatively simple.

Music Teaching Self-Efficacy (MTSE), Teachers' Perception and Engagement

The results of self-reported MTSE (pre, mid, and post) are graphed and tabulated. A line graph (Figure 3) shows the overall scores with markers, while a clustered column chart (Figure 4) shows the mean scores in five components (music knowledge, skills, lesson delivery, music integration, and continued skill growth). Table 2 lists the engagement details of teachers in the MBLP[®] study and their feedback. The details are discussed individually.

T1

T1 had low self-efficacy (10–40%) in music teaching before the MBLP[®] teacher training. She had no understanding of music integration or how to teach preschoolers music. Despite her modest understanding of the training, she put effort into it and was pleased with its clear objectives, well-organised content, and encouraging participation. She highly recommends the training to colleagues and gave excellent feedback on the trainer's presentation, efficacy, and constructive criticism.

T1 devoted 51.5 hours to the MBLP[®] study over two and a half months. Her confidence in music skills and integration increased the most; nevertheless, she was less confident in class delivery, which may be related to her lack of fluency in the English language. In short, her self-efficacy in music teaching began at 25%, grew to 51% following practicum, and reached 71% after completing the MBLP[®] study.

T2

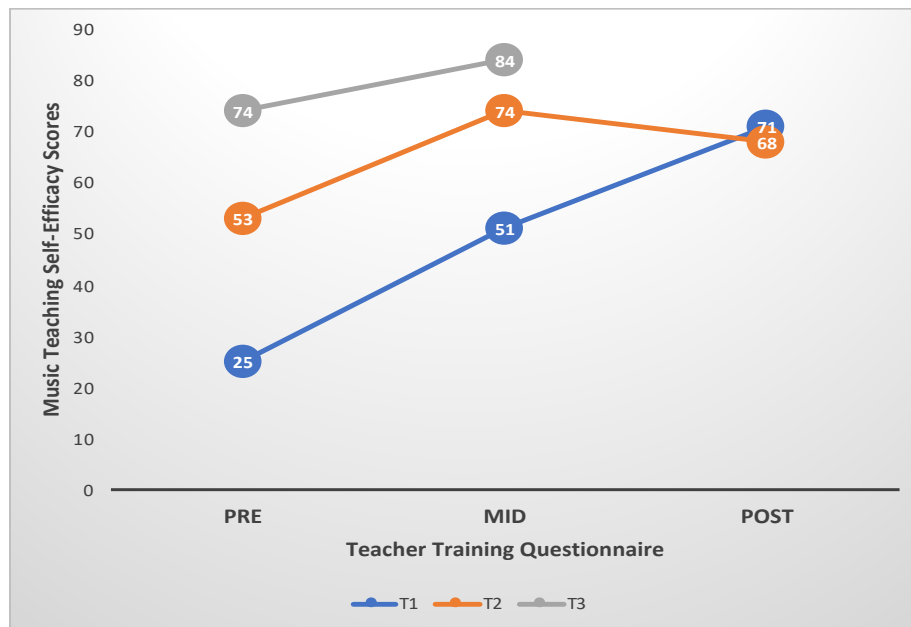
T2 had moderate self-efficacy (50–60%) in music skills and teaching, possibly due to her one year of violin experience. After the MBLP[®] teacher training, she expressed her effort and understanding of the information, but was unsure about delivering an effective MBLP[®] session. She appreciated the clear objectives, well-organised content, and encouraging participation and would recommend the training to colleagues. T2 gave moderately high ratings for the trainer's presentation, efficacy, and constructive feedback.

T2 spent 61.5 hours on the MBLP[®] study, demonstrating 53% self-efficacy in music teaching. After the practicum, she was confident (74%) in conducting a sequence of music-making activities during 30-minute MBLP[®] lessons. However, at the end of the study, her MTSE decreased to 68%. T2 felt compelled to improve her approach to teaching joyful and meaningful musical lessons as she learned more.

T3

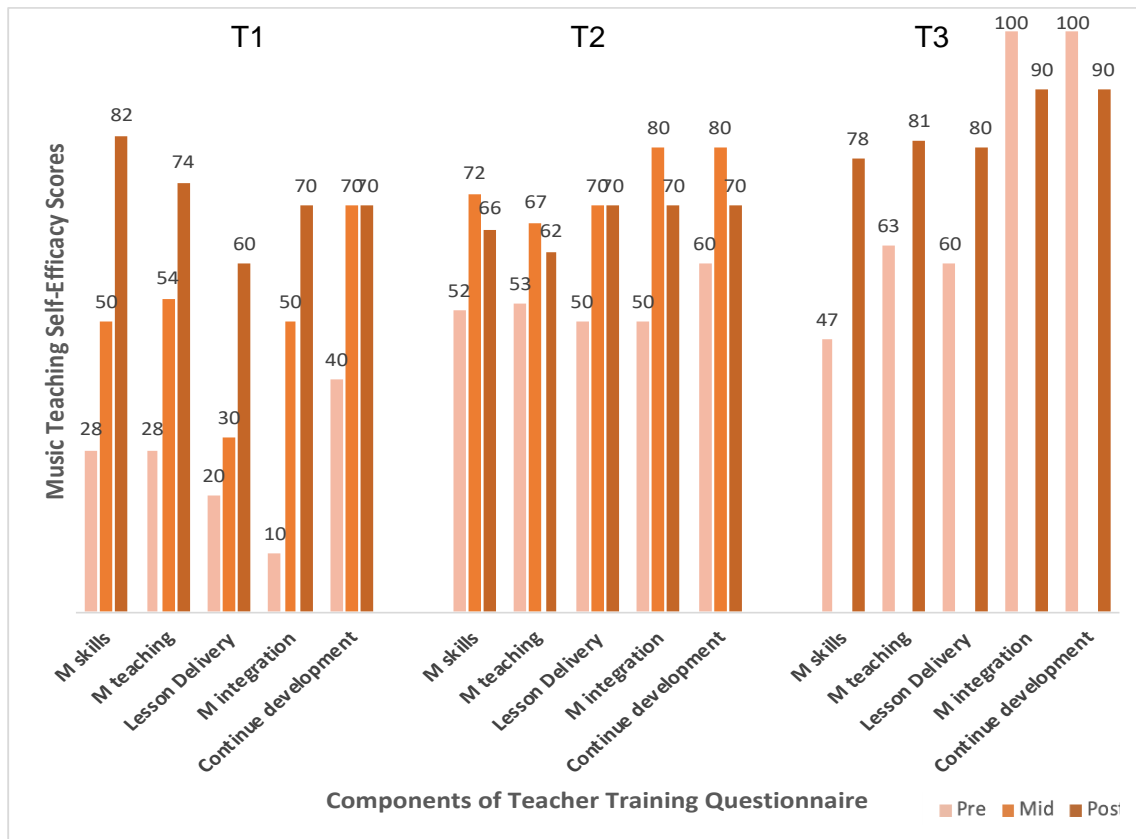
T3 had a high self-efficacy in using music for her teaching (60–100%), but was less confident in her music skills (47%). She used music to gather preschoolers for circle time or encourage physical activity, but never did a sequence of musical activities in 30 minutes like an MBLP[®] lesson. Despite being infected with COVID-19 after the first training day, she was pleased with the workshop's clear objectives, well-organised content, and encouraging participation. She gave the trainer good marks for presentation, efficacy, and constructive criticism.

T3 committed 31 hours of her restricted working hours to the MBLP[®] study. She bypassed the MTSE mid-assessment due to her delayed practicum. Despite her lack of musical skills, T3 was confident in integrating music into her teaching (74%) before the MBLP[®] teacher training. She reported a slight increase in MTSE to 84% after completing the study. Among the five components, her confidence in music skills increased significantly from 47% to 78%.



Note. T1= Teacher 1, T2 = Teacher 2, and T3 = Teacher 3. T3 was sick and only started her practicum in weeks 6–8, so she only reported the MTSE mid-assessment.

Figure 3. Pre-, mid-, and post-MTSE scores of the preschool teachers



Note. M = Music.

Figure 4. Pre, mid, and post-MTSE scores of teachers across five components

Table 2
 MBLP[®] study commitment and feedback of teachers

	T1	T2	T3
Participation hours in training & lesson delivery			
Briefing	1.5	1.5	1.5
Workshop	6	6	1.5
Practicum	3	3	3
Reflections	23	27	13
Observations	12	14	9
Lesson delivery after the practicum	6	10	3
Total hours	51.5	61.5	31
Feedback after teacher training and MBLP [®] study ^a			
Effort	80	70	90
Comprehension	58	74	80
Satisfaction	98	81	90
Practicality	80	60	100
The usefulness of post-lesson reflection	85	80	90

continued

Improved skills	*Music, Pedagogy, Integrate music into language learning	* + Control of Dynamics	* + Can use music in any activity and be creative
Recommendation	100	80	80
Suggestion (e.g., from open-ended questions)	It would be fantastic if the training could be held in Chinese.	Individual checks on pitch singing following solfège coaching are required.	Incorporate more interesting learning activities.

Note. ^a The feedback form ratings were transformed into percentages to provide a consistent scale for TTQ feedback.

MBLP[®] Delivery Performance

MBLP[®] delivery performance results are presented in Figures 5A–C, with descriptive analysis and statistical results in Table 3 for each participant.

T1

T1 was the first teacher to deliver MBLP[®] without prior observation, demonstrating improved confidence and competence through post-lesson reflection and real-time practice. Her performance improved from 41% in the first lesson to 69% after practicum and steadily increased to 89% in the final lesson. Post-lesson interactive reflections facilitated her improvement in subsequent lessons. T1 reported gaining music knowledge, skills, pedagogy, and the ability to integrate music into preschoolers' language enhancement.



Note. DP = During practicum. AP = After practicum

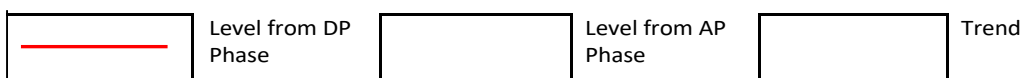


Figure 5A–C. MBLP[®] delivery performance scores of three teachers in DP and AP phases

Table 3 Descriptive statistics for teachers' MBLP[®] delivery performance in 2 phases.

DP ^a Phase	T1	T2	T3	AP ^b Phase	T1	T2	T3
Sessions	3	3	3		6	10	3
Mean	54	69	69.7		71.3	77.3	75
Median	59	67	72		71	78	75
SD	11.36	7.21	5.86		5.55	5.44	1.00
Range	41–62	63–77	63–74		69–74	69–85	74–76
S_p^c					6.43	7.88	4.20
Bias Correction					0.78	0.86	0.65
Hedges' g					2.11	0.90	0.83
Percentage of nonoverlapped data					100	88	67

Note. ^aDP = the teaching practice of MBLP[®] lesson delivery after the workshop, i.e., during the practicum. ^bAP = the MBLP[®] lesson delivery after the practicum. ^cSession = number indicates the frequency of MBLP[®] lesson delivery during the practicum (DP) and after the practicum (AP). T1 = Teacher 1, T2 = Teacher 2, T3 = Teacher 3 ^d S_p = Pooled standard deviation.

The results found that practical training significantly improved MBLP[®] lesson delivery performance, shifting the level from lower in the DP phase to higher in the AP phase. The growing trend in both phases indicated that teacher training with practicum was beneficial (see Figure 5A). The effect size of corrected Hedges' $g_s = 2.11$ revealed a strong positive relationship between practicum and MBLP[®] delivery performance (see Table 3).

T2

T2 observed three MBLP[®] lessons and engaged in T1's post-lesson reflection before beginning her practicum. She delivered her first lesson in 32 minutes, with most of the planned activities. However, she took 41 minutes because some preschoolers were in a mood. After a post-lesson reflection, she expressed her difficulty in delivering the lesson as expected and requested more practice and demonstrations from TS. In the third session, she regained confidence. Following the MBLP[®] study, she gained music knowledge, skills, pedagogy, and the ability to integrate music into language instruction. She learned to control dynamics in the music lesson.

Participating in peer observations and reflection sessions appeared to offer a stronger kickstart in delivering MBLP[®] lessons in T2's practicum, as she obtained an MBLP[®] Delivery Performance score of 69% on her first MBLP[®] lesson. Despite several moody preschoolers affecting her performance (63%) in her second lesson, she resumed her performance quality at 77%. T2 improved further and stabilised her performance scores from 82% to 88% in her last eight lessons after the practicum.

T3

T3 returned to the preschool one month later and began peer observation in the fourth week of MBLP[®] delivery. She observed and engaged in as much post-lesson reflection as possible to make up for her absence. She gave her first MBLP[®] session with some coaching from TS at the end of week 6. Being the junior group's class teacher, she confidently delivered her first MBLP[®] lesson in 35 minutes. T3's MBLP[®] delivery performance score increased from 63% to 74% in the third lesson, but remained stable at 74% following the practicum, when she spent relatively little time practising and preparing for the MBLP[®] lesson.

Figure 5C shows a slight shift in DP phase to AP phase, but the trend was not sustained in AP phase, indicating no functional relationship between T3's MBLP[®] performance and practical delivery during practicum. A PND of 67% also suggests no correlation between training with practicum and MBLP[®] delivery performance in T3.

DISCUSSION AND IMPLICATIONS

Based on the findings, all three non-music specialist preschool teachers from different backgrounds increased their music teaching self-efficacy from pre-training to post-MBLP[®] study, albeit to varying degrees. This finding suggests that the MBLP[®] teacher training, based on Bandura's (1986, 1997) social cognitive theory, including workshop, practicum, and interactive reflections and observations, is likely to impact teachers' confidence in music teaching positively. The finding coincides with Barrett and colleagues' (2019) postulation that there is enormous potential in fostering non-music specialist preschool teachers' positive attitudes towards music through professional development and learning by incorporating purposeful music activities and lessons. Moreover, these teachers participated in the MBLP[®] study for two to four times the minimum required training hours. The findings corroborate Bautista and colleagues' findings (2022) that early childhood educators are committed to enhancing music skills and teaching.

The results of two teachers who completed the full training revealed a significant association between the practicum and MBLP[®] lesson delivery performance. This finding implies that teachers with essential music knowledge, skills, and pedagogy in the workshop may provide higher-quality MBLP[®] lessons in inclusive classrooms after acquiring teaching-practice experience during practicum. Teachers may build confidence and competence as they practise, reflect, and receive feedback from trainers and colleagues. The findings support studies by Ibbotson and See (2021) and Thorn and Brasche (2020) that there is a positive link between the training provided to non-music specialists primary school teachers and effective music-making delivery. To our knowledge, this is the first research on preschool teacher training using a single-subject design to monitor the training process. The strong association between practicum and MBLP[®] lesson delivery performance paves the way for future studies on the impact of short-term teacher training on teachers' confidence and competence in delivering purposeful music lessons.

Nevertheless, there are important study limitations that restrict its replicability. First, given that there has never been a 30-minute music-making activity previously taught in this preschool, no observation data could be collected prior to the practicum to serve as the baseline MBLP[®] delivery performance. Consequently, the first three MBLP[®] lessons during the practicum were classified as baseline conditions, while lessons following the practicum were classified as intervention conditions. Thus, the results of this study should be interpreted with caution. Second, the MBLP[®] was developed entirely in English; it may take more time (more than 16 hours) for local or international teachers who are not fluent in English to comprehend the MBLP[®] delivery. Finally, as in-situ research, there was a lack of consistency regarding the optimal number and order of practicum, observation, and interactive reflection. There was only one group of preschoolers in preschool A, and the teacher's availability was limited. The teachers were not assigned in a defined interval and sequence as desired. As a result, none of the teachers had a uniform sequence or interval for each session of MBLP[®] delivery. Large-scale investigations are warranted to determine when and how long the assignment of practicum will affect teachers' confidence and competence in the delivery of effective music-making.

CONCLUSION

Preschoolers frequently experience language delays linked to ongoing language and academic challenges. Although music has been widely shown to support the development of early language skills, preschool teachers may lack the confidence and competence to integrate music for language enhancement. The delivery of purposeful music-making requires a well-designed teacher training programme for non-music specialist preschool teachers. This study found that the MBLP[®] teacher training programme—which includes workshop, practicum, interactive reflections, and observations—had a beneficial effect on the self-efficacy of preschool teachers. The study further demonstrated that practicum with interactive reflection after the workshop significantly improved the teachers' ability to deliver higher-quality music-making lessons.

The training of non-music specialists in preschools is an important endeavour. More extensive research is required to develop music-based language programmes while assisting preschool teachers to develop their confidence and competence in music teaching. Preschool teachers are important stakeholders in preventing and mitigating the degradation of language development in children with language delay in inclusive preschool settings.

ACKNOWLEDGEMENT

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REFERENCES

- Augustine, C., & Wong, H. Y. (2016). Music teaching readiness among non-specialised music teachers in government preschools. *Malaysian Music Journal*, 5(2), 54–69. <https://ejournal.upsi.edu.my/index.php/MJM/article/view/821>.
- Bačlija Sušić, B. (2018). Preschool teachers' music competencies based on preschool education students' self-assessment. *Croatian Journal of Education*, 20(SpecialEdition1), 113–129. <https://doi.org/10.15516/cje.v20i0.3048>.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W H Freeman/Times Books/ Henry Holt & Co.
- Bandura, A. (2006). Guide for constructing self-efficacy scales. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307 – 337). Greenwich, Connecticut: Information Age Publishing.
- Barni, D., Danioni, F., & Benevene, P. (2019). Teachers' self-efficacy: The role of personal values and motivations for teaching. *Frontiers in Psychology*, 10(JULY), 1–7. <https://doi.org/10.3389/fpsyg.2019.01645>
- Barrett, J. S., Schachter, R. E., Gilbert, D., & Fuerst, M. (2021). Best practices for preschool music education: Supporting music-making throughout the day. *Early Childhood Education Journal*, 50(3), 385–397. <https://doi.org/10.1007/s10643-021-01155-8>
- Barrett, M. S., Zhukov, K., & Welch, G. F. (2019). Strengthening music provision in early childhood education: A collaborative self-development approach to music mentoring for generalist teachers. *Music Education Research*, 21(5), 529–548. <https://doi.org/10.1080/14613808.2019.1647154>
- Barrett, M. S., Flynn, L. M., Brown, J. E., & Welch, G. F. (2019). Beliefs and values about music in early childhood education and care: Perspectives from practitioners. *Frontiers in Psychology*, 10(APR), pp. 1–18. <https://doi.org/10.3389/fpsyg.2019.00724>
- Barry, N. H., & Durham, S. (2017). Music in the early childhood curriculum: Qualitative analysis of pre-service teacher's reflective writing. *International Journal of Education & the Arts*, 18(16). Retrieved from <http://www.ijea.org/v18n16/>

- Baum, A. C. (2017). Powerful allies: Arts educators and early childhood educators joining forces on behalf of young children. *Arts Education Policy Review*, 118(3), 183–188.
- Bautista, A.; Toh, G.-Z.; & Wong, J. (2016) Primary school music teachers' professional development motivations, needs, and preferences: Does specialization make a difference? *Musicae Scientiae*. 22(2), 196–223
- Bautista, A., Yeung, J., McLaren, M. L., & Ilari, B. (2022). Music in early childhood teacher education: Raising awareness of a worrisome reality and proposing strategies to move forward. *Arts Education Policy Review*, 0(0), 1–11. <https://doi.org/10.1080/10632913.2022.2043969>
- Biasutti, M., Concina, E., Deloughry, C., Frate, S., Konkol, G., Mangiacotti, A., Rotar Pance, B., & Vidulin, S. (2020). The effective music teacher: A model for predicting music teacher's self-efficacy. *Psychology of Music*, 49(6), 1498–1514. <https://doi.org/10.1177/0305735620959436>
- Bolduc, J., & Lefebvre, P. (2012). Using nursery rhymes to foster phonological and musical processing skills in kindergarteners. *Creative Education*, 03(04), 495–502. <https://doi.org/10.4236/ce.2012.34075>
- Burak, S. (2019). Self-efficacy of pre-school and primary school pre-service teachers in musical ability and music teaching. *International Journal of Music Education*, 37(2), 257–271. <https://doi.org/10.1177/0255761419833083>
- Byiers, B. J., Reichle, J. & Symons, F. J. (2012). Single-subject experimental design for evidence-based practice. *American Journal of Speech-Language Pathology*, 21(4), 397-414.
- Chan, C. J., & Kwan, S. S. (2010). Implementation of music in government preschools in Malaysia: Music activities, teachers' perceptions and teachers' self-efficacy. *Pertanika Journal of Social Science and Humanities*, 18(2), 209–225.
- Cherry, K. (2023). "What is reciprocal determinism?" Accessed 16 August 2023, <https://www.verywellmind.com/what-is-reciprocal-determinism-2795907>.
- Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Learning Policy Institute. <https://doi.org/10.54300/122.311>
- Gillespie, C. W., & Glider, K. R. (2010). Preschool teachers' use of music to scaffold children's learning and behaviour. *Early Child Development and Care*, 180(6), 799–808. <https://doi.org/10.1080/03004430802396530>
- Grau-Sánchez, J., Jamey, K., Paraskevopoulos, E., Dalla Bella, S., Gold, C., Schlaug, G., Belleville, S., Rodríguez-Fornells, A., Hackney, M. E., & Särkämö, T. (2022). Putting music to trial: Consensus on key methodological challenges investigating music-based rehabilitation. *Annals of the New York Academy of Sciences*, 1518(1), 12–24. <https://doi.org/10.1111/nyas.14892>
- Hallam, S. (2017). The impact of making music on aural perception and language skills: A research synthesis. *London Review of Education*, 15(3), 388–406. <https://doi.org/10.18546/LRE.15.3.05>
- Ho, Y. L., & Bautista, A. (2022). Music activities in Hong Kong kindergartens: A content analysis of the Quality Review reports. *Revista Electrónica de LEEME*, 49(June), 32–49. <https://doi.org/10.7203/leeme.49.24249>.
- Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S. & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children*, 71(2), 165–179.
- Ibbotson, L., & See, B. H. (2021). Delivering music education training for non-specialist teachers through effective partnership: A Kodály-inspired intervention to improve young children's development outcomes. *Education Sciences*, 11(8). <https://doi.org/10.3390/educsci11080433>
- Ilari, B. (2007). Music and early childhood in the Tristes Tropiques: The Brazilian experience. *Arts Education Policy Review*, 109(2), 7–18. <https://doi.org/10.3200/AEPR.109.2.7-18>
- Ilari, B. (2020). Longitudinal research on music education and child development: Contributions and challenges. *Music and Science*, 3, 1–21. <https://doi.org/10.1177/2059204320937224>
- Jaschke, A. (2019). Music, maestro, please: Thalamic multisensory integration in music perception, processing and production. *Music and Medicine*, 11(2), 98. <https://doi.org/10.47513/mmd.v11i2.659>
- Jones, J. L., & Jones, K.A. (2013). Teaching reflective practice: Implementation in the teacher-education setting. *The Teacher Educator* 48 (1): 73–85. <http://doi.org/10.1080/08878730.2012.740153>
<https://doi.org/10.1080/08878730.2012.740153>
- Kenny, A., M. Finneran, and E. Mitchell. 2015. Becoming an educator in and through the arts: Forming and informing emerging teachers' professional identity. *Teaching and Teacher Education*, 49, 159–167. <https://doi.org/10.1016/j.tate.2015.03.004>.
- Kirby, A. L., Dahbi, M., Surrain, S., Rowe, M. L., & Luk, G. (2022). Music Uses in Preschool Classrooms in the US: A Multiple-Methods Study. *Early Childhood Education Journal*., <https://doi.org/10.1007/s10643-022-01309-2>
- Krasny-Pacini, A., & Evans, J. (2018). Single-case experimental designs to assess intervention effectiveness in rehabilitation: A practical guide. *Annals of Physical and Rehabilitation Medicine*, 61(3), 164–179. <https://doi.org/10.1016/j.rehab.2017.12.002>

- Kratochwill, T. R., & Levin, J. R. (2014). *Single-case intervention research methodological and statistical advances*. American Psychological Association.
- Legette, R. M. (2018). Preparing preservice music teachers to teach in prek settings through the use of service learning. *Music Educators Journal*, 105(1), 28–32. <https://doi.org/10.1177/0027432118784364>
- Lau, M., & Grieshaber, S. (2018). School-based integrated curriculum: An integrated music approach in one Hong Kong kindergarten. *British Journal of Music Education*, 35(2), 133–152. <https://doi.org/10.1017/S0265051717000250>
- Lederer, S. H. (2018). Teaching children with language delays to say or sign more: promises and potential pitfalls. *Young Exceptional Children*, 21(1), 7–21. <https://doi.org/10.1177/1096250615621358>
- Lobo, M. A., Moeyaert, M., Cunha, A. B., & Babik, I. (2017). Single-case design, analysis, and quality assessment for intervention research. *J Neurol Phys Ther*, 41(3), 187–197. <https://doi.org/10.1097/NPT.000000000000187.Single-Case>
- Lorenzo, O., Herrera, L., Hernández-Candelas, M., & Badea, M. (2014). Influence of music training on language development: A longitudinal study. *Procedia - Social and Behavioral Sciences*, 128, 527–530. <https://doi.org/10.1016/j.sbspro.2014.03.200>
- Patel, A. D. (2011). 'Why would musical training benefit the neural encoding of speech? The OPERA hypothesis'. *Frontiers in Psychology*, 2, Article 142, 1–14.
- Patel, A. D. (2014). Can nonlinguistic musical training change the way the brain processes speech? The expanded OPERA hypothesis. *Hearing Research*, 308, 1–11. <https://doi.org/10.1016/j.cognition.2004.09.008>
- Pestana, G. (2022). Preparing preservice early childhood educators to use music in Australian settings: An audit of programmes. *Australasian Journal of Early Childhood*, 47(1), 74–86. <https://doi.org/10.1177/18369391211056669>
- Pitt, J. (2019). Communicating through musical play: combining speech and language therapy practices with those of early childhood music education—the SALTMusic approach. *Music Education Research*, 22(1), 68–86. <https://doi.org/10.1080/14613808.2019.1703927>
- Pitts, S. E. (2016). Music, language and learning: Investigating the impact of a music workshop project in four English early years settings. *International Journal of Education & the Arts*, 17(20), 1–26.
- Politimou, N., Dalla Bella, S., Farrugia, N., & Franco, F. (2019). Born to speak and sing: Musical predictors of language development in pre-schoolers. *Frontiers in Psychology*, 10(APR), 1–18. <https://doi.org/10.3389/fpsyg.2019.00948>
- Ruokonen, I., Tervaniemi, M., & Reunamo, J. (2021). The significance of music in early childhood education and care of toddlers in Finland: an extensive observational study. *Music Education Research*, 23(5), 634–646. <https://doi.org/10.1080/14613808.2021.1965564>
- Sim, T., & Lee, J. A. C. (2023). Music-based language programme for preschool teachers' training and lesson delivery: A pilot trial. *Journal of Cognitive Sciences and Human Development* 9(2), 37–62
- Scruggs, T. E., & Mastropieri, M. A. (1998). Synthesizing single-subject research: Issues and applications. *Behavior modification* 22.3, 221–242
- Thorn, B., & Brasche, I. (2020). Improving Teacher Confidence -- Evaluation of a Pilot Music Professional Development Program for Primary Teachers. *Australian Journal of Music Education*, 53(1), 41–47.
- Valdebenito, K., & Almonaci-Fierro, A. (2022). Teacher Self-efficacy in Music Teaching: Systematic Literature Review 2011-2021. *Journal of Curriculum and Teaching*, 11(8), 317–328. <https://doi.org/10.5430/jct.v11n8p317>
- Vannatta-Hall, J. E. (2010). *Music education in early childhood teacher education: The impact of a music methods course on pre-service teachers' perceived confidence and competence to teach music*. [Doctoral thesis, University of Illinois at Urbana-Champaign].
- Welch, G. F. (2020). The challenge of ensuring effective early years music education by non-specialists. *Early Child Development and Care*, 0(0), 1–13. <https://doi.org/10.1080/03004430.2020.1792895>
- Xu, M.L., & Leung, S.O. (2018). Effects of varying numbers of Likert scale points on factor structure of the Rosenberg Self-Esteem Scale. *Asian Journal of Social Psychology*, 21, 119–128

Appendix
Snapshots from the study.

A. Teacher Training: first day of the workshop



B. MBLP lesson delivery: sing with picture cards (one of the activities in Week 2)



C. MBLP lesson delivery: Round dance (one of the activities in week 5)

