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Musical play in the early years: the impact of a professional development programme on teacher efficacy of early years generalist teachers

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ABSTRACT

Teacher Efficacy (TE) refers to teachers' confidence in their ability to promote student's learning. Research shows that generalist teachers' TE for music education is generally low, with many teachers associating music education with innate musical talents – a problem exacerbated by music education programmes that focus on singing or playing instruments. Musical play is a form of music education in which young children more or less freely explore and create with sound with limited guidance from a teacher, requiring fewer musical skills. This paper reports on an in-situ professional development program (PD) that focused on musical play as a means of enhancing early years teachers' TE for musical play and for music education in general. For this study, a mixed method exploratory multiple-case study was used. Three early years teams (N = 14) took part in a PD that focused on knowledge and skills related to facilitating musical play. Data were collected through surveys and interviews. Findings demonstrate that taking part in the PD enhanced teachers' TE for musical play and for 50% of the respondents for music education in general. The PD's design features longer duration, collective participation, active learning and qualitative curriculum materials had contributed to teachers' learning.

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Introduction

Generalist primary classroom teachers are required to teach all subjects, including music, although many feel they lack the skills and confidence to do so (Ballantyne 2007; Biasutti, Hennessy, and de Vugt-Janssen 2015; Seddon and Biasutti 2008). This ongoing and global issue could be due to the limited amount of training allocated to music by teacher education courses (e.g., Holden and Button 2006; Hallam et al. 2009; Ruddock and Leong 2005). Regardless of the cause, it appears that many practitioners complete their training feeling that they lack the required (innate) talent, identify themselves as being 'unmusical', and consequently harbour a reluctance to teach music (Holden and Button 2006; Ruddock and Leong 2005). An ability to teach a particular subject, however, can also be

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influenced – among other things – by a teachers’ level of self-efficacy, which Bandura defines as ‘beliefs in one’s capabilities to organise and execute the courses of action required to produce given attainments’ (1997:3). Self-efficacy has been shown to have considerable impact on teacher effectiveness. Tschannen-Moran and Woolfolk Hoy (2006), define teachers’ self-efficacy as ‘*Teacher efficacy*’, being the judgment teachers make of their teaching capabilities:

‘... to accomplish desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated’
(p. 783).

Tschannen-Moran & Hoy (2001) discerned three factors that impact on teacher efficacy (TE). The first factor related to *efficacy for instructional strategies*, meaning teachers’ efficacy for explaining, questioning, and adjusting the pedagogical content to the students’ level or interest. The second factor concerned *efficacy for classroom management*, referring to rules and teachers’ responses to (disruptive) student behaviours, whilst the third was *efficacy for student engagement*, which indicated the extent to which teachers believe they can affect their students’ motivation for learning, within the school’s context and with respect to students’ background.

In particular, the relatively low level of teachers’ efficacy for teaching music may be due to the fact that in primary music education, the emphasis is predominantly on singing and playing instruments (Garvis 2010; Hooegeveen et al. 2014; Stavrou 2012), both of which are teacher-driven classroom activities that require the very musical abilities that many teachers feel uncertain about. Hence, an alternative to such ‘performance-based’ forms of music education in early years settings, could be ‘*Musical Play*’. In musical play, young children explore and create with sound with limited guidance from a teacher whilst simultaneously learning about music and about themselves as a musician in a playful way, which an arrangement Vygotsky (1978) argued was an effective way to learn. The teacher’s role in musical play is facilitating and supportive, without necessarily requiring musical performance skills. Musical play therefore, can be a valuable addition to early years music education by offering young children an alternative form of musical engagement, more appropriate to the way they learn, and offering teachers an inclusive, attainable way to enhance the music education they offer.

In The Netherlands, children enter primary education at the age of 4, with 2 years of early years education. There is no standard Early Years Curriculum. Many teachers offer numerous opportunities for play within these early years (Van Oers 2013) and are therefore often experienced in facilitating and guiding play. This may indicate that teachers may already possess the skills required for promoting and facilitating musical play. Previous research, however, appeared to indicate otherwise. Nieuwmeijer, Marshall, and Van Oers (2019) interviewed 20 Dutch early years teachers to gain a better understanding of the music education they currently offer, the role of play in their curriculum and the extent to which they facilitate musical play. Findings confirmed that respondents’ curricula were indeed full of opportunities for play, with teachers employing several scaffolding techniques, but their music education consisted mainly of teacher-driven activities, such as (functional) singing, moving to (sung) music and instrumental playing. With the exception of two teachers, musical play had not featured in their own education; however, one teacher facilitated musical play successfully and was able to do so due to

knowledge gained from additional early years training in music. We therefore argued that early years teachers might be capable of facilitating and guiding musical play, following given appropriate professional development.

With respect to professional development (PD), in-depth studies by Birman et al. (2000), Desimone (2009) and Van Veen, Zwart, Meirink & Verloop (2010) have offered strong support for the effectiveness of PD when built around five core features, namely,

Focus on Content Knowledge: PD content relating to teachers' daily practice and to subject content can positively affect their teaching and student outcomes,

(Van Veen et al., 2010; Birman et al. 2000),

Active Learning: engaging in active learning (including observing-/being observed teaching, and reviewing student work) leads to increased knowledge and skills and changed classroom practice (Desimone 2009; Birman et al. 2000; Veen, van et al. 2010),

Collective Participation: Joint participation by teachers from the same school or class may lead to interaction, discussion and feedback – each potentially powerful learning tools (Birman et al. 2000; Veen, van et al. 2010),

Longer Duration: effective PD requires a substantial amount of time (Birman et al. 2000; Veen, van et al. 2010). Views on the exact duration vary from 14 to 80 hours, depending on the activity (Veen, van et al. 2010),

Coherence: effective PD content should be consistent with teachers' knowledge and beliefs, as well as with national and district reforms and policies (Birman et al. 2000).

Additionally, teacher learning has been shown to be influenced by the quality of the teaching materials (Tschannen-Moran and Woolfolk Hoy 2001; Bismack et al. 2015). Effective teaching materials incorporate subject matter, provide for goals, promote teachers' learning of new instructional practices and support teacher autonomy, enabling independent progress (Grossman and Thompson 2008; Davis and Krajcik 2005).

Focussing more specifically on music education, Rogers et al. (2008) offered Primary School teachers a PD-course on singing and found that collective participation, longer duration and a focus on content knowledge tended to contribute to increased program effectiveness. Gruenhagen (2007) found that active, collaborative and practice-oriented learning, based on local context, were key factors for a successful PD program. More recently, Barrett, Zhukov, and Welch (2019) conducted an in-situ music mentoring PD program for early years (EY) teachers focussing on singing and simple instrument work, and found that collaboration between teachers and the longitudinal nature of the PD-program were important features that contributed to its effectiveness.

These studies provide useful pointers as to the features underlying the effectiveness of PD that has focused on specific ways of singing and/or playing instruments. To our knowledge, no previous study has focused on the effectiveness of PD on musical play as a means of enhancing generalist teachers' competence and teacher-efficacy.

Therefore, the current study aimed to explore the extent to which professional development on facilitating and scaffolding musical play, in line with teachers' existing supportive teaching skills, can impact positively on EY teachers' teaching efficacy for musical play and for the music education they offer.

The following research questions underpinned the research:

1. *To what extent does a PD-program on musical play affect EY teachers' Teacher Efficacy for musical play and for music education in general?*

2. What design features of the PD-program have been effective in teacher's development of Teacher Efficacy?

Play and musical play

Central to this research was a PD program on musical play and the role of the teacher within it, which was based on an extensive literature study. In order to get an idea of the PD's content in the context of this article and to be able to interpret the results of the research, this section provides an overview of the literature used.

Play

This research drew upon the notion of play as described within the Cultural-Historical Activity Theory, which defines play as a cultural activity (Vygotsky 1978; Van Oers 2013). In their play activities, young children create imaginary situations in which they freely re-enact the sociocultural practices of which they are a part in order to give meaning to them: what do people do and how do they relate to each other within this activity? The activity theory of play sees play as an outcome of cultural processes, human decisions and cultural values and understandings (Van Oers 2013, 191). Children's abilities to participate in such cultural practices can be enhanced by means of pedagogical adult engagement ('scaffolding'), which responds to children's need for help to improve their participation in the current role-play (Van Oers 2013). The concept of scaffolding was introduced by Wood, Bruner, and Ross (1976) and refers to the support provided to a learner by an expert, which occurs within the child's zone of proximal development (ZPD). From a cultural activity theory perspective, Van Oers (2020) described the concept of ZPD as 'a product of meaningful interactions and helpful modelling between a child and more knowledgeable others for the improvement of participation in cultural practices in their cultural community' (p. 1740). Van De Pol, Volman, and Beishuizen (2010) discerned three characteristics within scaffolding, namely: 1) contingency – the tailored, adaptive and adjusted support the teacher gives to the child; 2) fading – the gradual withdrawal of the teacher's support, and 3) transfer of responsibility – the responsibility of the performing task is transferred to the child. However, as scaffolding involves fine-tuned and personalised support in face-to-face or small-group settings, this appears to be difficult to achieve when a teacher has to simultaneously attend to 30 pupils (Rogoff 1990; Myhill and Warren 2005).

Musical play

Previously, Nieuwmeijer, Marshall, and Van Oers (2019) explained that children should be seen as participants in the cultural practices of their community. They sing in schools or places of worship, watch people dance, or play musical instruments, and bring these musical experiences and corresponding cultural tools into their own play and create meaning out of them (Barrett and Tafuri 2012). Research shows that engaging in such musical play can contribute to musical development, enabling and encouraging children to sing and make up their own songs (Marsh

and Young 2006), dance rhythmically to their own or to others' music (Moorhead and Pond 1978; Young 2003), explore sound properties of musical instruments and sound-makers (Dansereau 2015; Wright, 2003), and to invent individual forms of musical notation (Carroll 2007; Kenney 2012). Additionally, Zachariou and Whitebread (2015) found that open-ended instrumental musical play activities fostered self-regulatory behaviours, such as choice and control.

Musical play, therefore, enables children to learn in a meaningful way about music and themselves as musicians, with tangible, positive effects on their musical and overall development. Hence, we define musical play as:

'... a cultural activity that takes place in a prepared musical environment in which young children, with limited guidance of a teacher, intrinsically learn about music through highly involved, multi-sensory play with voice, movement and sound (makers), paired with or consecuted by musical role play in which they more or less freely reconstruct the socio-cultural and musical practices of their culture, based on the roles, rules and tools that go with them'. (Nieuwmeijer, Marshall, and Van Oers 2019, 863).

Literature offers various examples on how to facilitate children's musical play.

Barrett and Tafuri (2012) and St. John (2006) suggest that firstly, the teacher provides for an educational environment rich in musical opportunities, which enables children to immerse themselves in a broad range of musical experiences. Here, the teacher allows children to play voluntarily and freely for prolonged periods, as research by Bartel and Cameron (2007) and Dansereau (2015) shows that time and repeated exposure to musical play are conditional for children to move through a range of play behaviours. For a subsequent development of their musical play, children need support from a more knowledgeable other: either their peers or the teacher. Regarding peer support, St. John (2015) suggests the teacher should facilitate shared musical experiences because engaging in collective musical play enables children to discover their (musical) identity in relation to others. This may lead to peer mediation: the scaffolding of each other's learning towards a greater musical competence and understanding within their ZPD (Bartel & Cameron, 2007; Whiteman 2008).

With respect to teacher support, Young (2005) and Smith & Montgomery (2007) point out that in order to be able to read children's musical intentions and subsequent needs in practice, teachers require some knowledge of the (musical) activities of children in general. St. John (2006) stresses the importance of this knowledge as this enables teachers to act as an 'observer-collaborator' – or what Koutsoupidou (2020) calls a 'co-player'. Whilst participating, observing and interpreting children's musical play, the teacher in this capacity can provide various forms of conditional support, preferably within a child's ZPD (Bartel and Cameron 2007, 62/63). Within this scaffolding, Bartel and Cameron (2007) and Young and Glover (1998) suggest that as children generally understand more of music than they can articulate in words, teachers should provide descriptive feedback, reinforcement, and consolidation so that children gain awareness of their own music, and acquire a vocabulary to label what they understand. Wiggins (2015) finally, highlights the importance of fading in this scaffolding process: teachers should

allow children to think and function independently and perform only those scaffolding actions necessary to help children solve the problem, rather than offering them a solution.

Methods & materials

Methodology

This study adopted a mixed methods exploratory multiple-case study approach, defined as ‘an empirical inquiry that investigates a contemporary phenomenon [...] in depth and within its real-world context’ (Yin 2014, 16). Our goal was to evaluate the effectiveness of a PD program for teachers’ teacher efficacy for musical play. The research employed a multiple case study, as the results can be more convincing and robust, when compared to than in single-case studies (Yin 2014). A multiple-case study contains several cases and therefore had more than one sub-unit of analysis (ibid.). In our study, the main unit of analysis was formed by a population of EY teachers as a whole, and the subunits of analysis created by three individually participating early years teams. From each case, we collected both qualitative and quantitative data, as this method will assist with corroboration and contribute to the breadth and depth of understanding (Johnson, Onwuegbuzie, and Turner 2007).

Participants

Fourteen EY teachers from three schools responded positively to a request to participate in the research. All schools were situated in the North-West of The Netherlands and were comparable in terms of denomination (Roman Catholic) and size.

In School 1 ($n = 325$), activities were mainly play-based with children’s play guided by teachers. The four participating EY teachers were aged between 27–46 years old, with between 3–15 years of experience. All worked full time. In School 2 ($n = 400$), five teachers aged between 30–60 years, agreed to participate. All worked part time and had between 6 and 28 years of experience. In this school, play was part of the curriculum and partially guided. Five part-time teachers aged between 26 and 52 years old, with experience varying from 4 to 25 years, participated from School 3 ($n = 365$). Here, play formed a minor part of the otherwise strongly cognitively oriented curriculum and children received relatively limited guidance. The sample was representative of the general population with respect to vocational background and age variance (CBS 2018). All participants were female, which corresponds to the situation in Dutch primary education where 86% of teaching staff are female (De Zeeuw, Beijsterveldt, Glasner, Bartels, de Geus & Boomsma, 2014).

Intervention

The intervention consisted of an in-situ, team-based PD program on facilitating and scaffolding musical play in early years’ education, delivered by author one. All participants consented to attending all PD sessions, trying the content in their practice and completing questionnaires and interviews about their experiences. The PD was

developed according to the design features as described previously, namely: (a) long-term duration, (b) collective participation, (c) active learning, (d) focus on content knowledge, and (e) effective curriculum materials.

Regarding (a): Each team was offered monthly PD sessions of 90 minutes' duration in their own school, for a period of six months, (January-June 2017).

Regarding (b), (c), and (d): Rather than provide generic training, the PD employed a modified version of 'Teacher Rounds' (TR); a research-based means of collective practice development (Del Prete 2013). TR is a type of classroom-based learning in which teachers develop their practice within their own context and actively construct new knowledge through individual and group work (*ibid.*). In the first PD session, supported by an 'Information Sheet' (see also: e): effective curriculum materials), participants were informed of the theoretical and subject matter concerning the facilitation of musical play, possible musical actions, and some video-based observation skills. Subsequently, each respondent initiated a musical play area and was asked to video record children's musical play. Two weeks later, the PD trainer visited each participant to undertake an interim evaluation and mentoring session; namely, a 'Teacher Round'. Findings were noted in a 'Round Report'. Outcomes of this sequence determine the content of the subsequent session and its accompanying Information Sheet. In this subsequent session, new pedagogical and content knowledge on facilitating and scaffolding musical play was offered, in line with the direct learning needs of the respondents and their pupils. Training on observation skills took place using personal video recordings. Finally, all musical play activities demonstrated by the PD leader were actively performed by the respondents and thus experienced first-hand. A similar process was repeated for each of the four remaining monthly sessions. However, as the experiences and learning needs of the respondents developed differently, the PD content evolved accordingly.

Rather than taking a positivist, empirical approach that seeks to preserve objectivity by ignoring personal traits and prejudices, we acknowledged that the presence and influence of the teacher-investigator is a 'resource to be capitalized upon' (Holliday 2002, 145). Through participation in the PD, the researcher was able to serve as a mentor, applying solid professional knowledge of content matter and teaching skills in the field of musical play, in addition to acting as an exemplary teacher – thus demonstrating effective mentor qualities appropriate to music education (Conway and Hodgman 2006).

Regarding (e): Information Sheets were developed from a thorough, literature-driven database outlining the various manifestations of children's musical play, its positive influence on their musical and overall development, and on how to facilitate, observe, and scaffold such forms of play. This 'raw' database was then translated into easy-to-read and visually appealing Information Sheets. Additionally, for practical use in the classroom, the content of the Information Sheets was also offered in smaller thematic information units in the form of cards. All respondents received both the Information Sheets and a set of cards.

Data collection

Data were collected as follows:

Pre-intervention survey

A pre-intervention survey provided a baseline measurement against which to compare relative changes. It used an open-ended questionnaire about the respondents' musical background, the content of their initial music education training and the role of play in the school curriculum.

Questionnaire on TE

A second questionnaire was administered pre, mid, and post intervention over a six-month period. A 5-point Likert scale was utilised, consisting of 18 statements, arranged into 4 categories, namely:

- 1) Instructional strategies, subdivided in (a) knowledge and (b) skills;
- 2) Classroom management;
- 3) Student engagement;
- 4) Contextual factors (available time, space, and materials).

Categories 1–3 were based on Tschannen-Moran & Hoy's (2001) Ohio State Teacher Efficacy Scale, whilst category 4 was added following a pilot survey with two EY teachers, both experts with experience through participation in a previous research project on musical play (Nieuwmeijer 2013). Finally, to avoid bias, the questionnaire was given the more neutral title 'Appraisal Inventory' rather than 'Teachers Self-Efficacy'. (*See supplemental material*).

Round reports

During the Teacher Rounds the PD trainer employed field notes to record the details of conversations with individual/groups of teachers.

Open-ended questionnaire

Each session began with respondents responding to three reflective questions: (1) '*What success experiences have you experienced over the past 4 weeks?*', (2) '*What did you experience as difficult?*', and (3) '*What more would you like to learn?*'. Results served as both qualitative data and input for the subsequent PD session's content.

Exit interview

After completing the PD, semi-structured interviews were conducted lasting approximately 50 minutes. The interview schedule was arranged around five themes, namely, teacher efficacy, features of effective PD, scaffolding, valuation of musical play and learning yield of the PD by respondents. The interviews were video recorded and transcribed verbatim.

All participants were informed of their right to withdraw from the research and assured of confidentiality and anonymity and all consented to take part. The research was carried out according the ethical guidelines as set down by the British Educational Research Association (2018).

Analysis

For the analysis, all results were eventually compared in a cross-case analysis, in order to be able to draw conclusions that would account for the main unit (Yin 2014). This study had a limited number of respondents. We argue that small populations are ideal for testing new hypotheses in that they can provide important indications for future work without the need for assigning significant levels of resources (Hackshaw 2008). However, we accept that small sample sizes may also lead to a higher variability, restricted significance and larger effect sizes, which can affect the reliability of survey results. We therefore did not use the quantitative data to predict or generalise results to a larger population but prioritised the qualitative data and regarded the quantitative data as descriptive, with the aim to support and augment the qualitative findings (Creswell 2014).

Single case analysis

Qualitative data

Interview verbatim, Round Reports, and outcomes of the open-ended questionnaires were combined into one qualitative dataset. These were carefully read for the creation of inductive codes, which were then combined with deductive codes based on the interview schedule.

This resulted in a set of 52 codes. Subsequently, one respondent's dataset was coded using this code set. To establish inter-rater reliability, two independent, research active, and experienced music teacher educators (MA, PhD) each coded the same dataset using the 52-code set. As no significant differences with the initial coding were found, the dataset was coded using Atlas.ti, vs. 8.2.2. (*see supplemental material*).

Quantitative data

Questionnaire data on Teacher Efficacy were analysed using SPSS vs. 26. The reliability of the categories was calculated using Cronbach's Alpha (see Table 1).

In the questionnaire, each participant provided ratings for their level of teacher efficacy on three separate occasions, namely, pre, mid, and post intervention, and this data was treated as a repeated measure and therefore analysis was carried out through a Wilcoxon sign-rank test. This was deemed to be a suitable measure as the test is totally appropriate for a repeated measure design in which the same subjects provided evaluations under different conditions (Field 2017).

Finally, to investigate whether age and years of teaching experience were of influence on the results, a Mann Whitney test was performed on all data.

Table 1. Cronbach's alpha questionnaire teacher efficacy.

Category	Statements number	Cronbach's Alpha
1. Instructional strategies	1a: Knowledge	.868
	1b: Skills	.669
2. Classroom management	7 a/b, 8, 9, 11	-
3. Student engagement	10	-
4. Contextual factors	15, 16	.626
4 a: Time	12, 13	.824
	14	-
4 b: Space & Materials		

Cross-case analysis

Pattern analysis (Hatch 2002) was employed to compare single-case outcomes. Themes that emerged from this comparison enabled overarching patterns to be identified, highlighting what happened and how it happened. Patterns of consistently co-occurrent events were then substantiated with excerpts from the raw data.

Subsequently, single case quantitative results were compared and outcomes added to the pattern analysis, allowing areas of conflict or agreement to be identified and conclusions drawn that might account for the main unit (see *supplemental material*).

Findings

This section will present the outcomes of the cross-case analyses, in response to the research questions. Excerpts from the qualitative data are provided when they are appropriate and represent a balanced distribution over all cases.

RQ 1: To what extent does a PD-program on musical play affect EY teachers' Teacher Efficacy for musical play and for music education in general?

1. Effect of the PD on TE for instructional strategies

1.1. Instructional strategies: knowledge

In all cases, teachers indicated they had acquired knowledge about young children's musical development and on how to recognise development in children's play, and they had acquired a better understanding of facilitating and scaffolding musical play. These accomplishments have apparently contributed to their TE for Instructional Strategies:

'I have gained insights into the objectives for music education. So: the first phase, the first steps within music. I've learned how to bring children a step further'.

(Case 1, interview, D.)

A Wilcoxon Signed Ranks Test of the quantitative data offered partial support for this increase in teacher ratings over time for 'Instructional Strategies/Knowledge', with significant results in Case 3 ($p < .043$), but non-significant results for Case 1 ($p < .068$) and Case 2 ($p < .068$).

1.2. Instructional strategies: skills

According to the qualitative data, all cases indicated having succeeded in facilitating musical play. Subsequent scaffolding of musical play in their practice, however, appeared to be more complicated. Case 1 teachers, who worked from an overall play-based curriculum, said they had only partly succeeded in observing children's musical play, joining in, and providing new input. Case 2 teachers' guidance varied, with observations and joining in varying per teacher from regularly to occasionally – depending on their available time and space. One of them observed and participated

in her pupils' musical play regularly, stating that *'it had completely taken hold of her and the children'*. Case 3 teachers offered the least amount of scaffolding, limited to occasional, brief observations.

To explain their limited or absent scaffolding, teachers indicated that – although they had been adequately informed by the PD on how to scaffold children's musical play, they experienced a structural lack of time to effectively put this knowledge into practice, and thus acquire the necessary scaffolding skills:

'I have learned what to observe and what to do next; I know how to do it. I just haven't been able to practice it sufficiently because I have 30 kids who all do something different. I can't cut myself into tens'.

(Case 1, interview E.)

'Observation and subsequent scaffolding is something I haven't really been able to do. I just lacked the time. Only incidentally I could take a look, which really didn't suffice'.

(Case 2, interview M.)

'E. indicated not to have scaffolded children's play. She said: 'I'm just being honest; I just didn't have time'.

(Case 3, Round Report E.)

Three reasons can be identified for this time deficit. A first and important reason appeared to be group size (25–31 children on average). During playtime, three or four children played in the music area, while the remaining children engaged in other (play-) activities. Therefore, teachers guided multiple groups of children, leaving them little time for regular observation or joining in the music area. In Cases 2 and 3, a second reason for a lack of time was teachers' part-time employments, simply resulting in less practice time. Finally, the school-wide curriculum, which strongly emphasised maths and language, left Case 3 teachers limited time available for other options. All these causes of time deficit may have negatively impacted on the levels of TE for Skills/Instructional Strategies and for Student Engagement.

Outcomes of the quantitative data partly confirm these findings. In the questionnaire, teachers responded to the statements: *'I come around to observe children in their musical play activities'* and: *'I come around to scaffold children's musical play activities'*. A Wilcoxon test showed that Case 1 teachers all rated their available time differently, resulting in a non-significant outcome of $p. < .102$. Case 2 teachers were all negative about their available time, which translated in a value of $p. < .715$. Case 3 teachers, however, in contrast to the qualitative results, demonstrated a significant positive response about their available time, ($p. < .042$); a contradictory result that will be discussed later.

Despite their lack of time, practically all teachers thought guidance important enough for children's musical play to devise alternative ways that better fitted their practice. With respect to observation, for example, some teachers filmed children's musical play and used the images for observation after school time. Some chose to scaffold during circle time, in which they introduced new activities through modelling or had children's invented musical notations performed and discussed. Case 1 and 2 teachers watched footage of children's play on the IWB during circle

time or had children perform live, each followed by a discussion – both with the aim of verbalising children’s musical actions and enriching other children’s play. Yet, while these self-devised forms of scaffolding were contingent to some extent, the two subsequent characteristics of scaffolding, namely, fading and transfer of responsibility, were addressed only haphazardly, and relatively abruptly: ‘Now you can try this yourself – I’ll drop by later to have a look’.

Quantitative data on Instructional Strategies/Skills were collected by means of teachers scoring on statements related to skills, such as: ‘*I can adjust the musical play area to children’s needs*’, or: ‘*Based on my observations, I can model alternative musical actions in order to enhance children’s musical play repertoire*’. These statements emphasise the extent to which teachers felt they had the necessary skills for performing these actions, with most of them again rating themselves fairly highly, that is as follows: regardless of whether they had actually applied these skills, they knew how to do so. Over time, this confidence translated into an increase of TE for Instructional Strategies/Skills for Case 2 and 3; showing outcomes of $p < .043$ for Case 2 and $p < .042$ for Case 3. Case 1 showed less significant increase levels, evidenced by a p -value of $< .068$. Taken overall, outcomes suggest that teachers felt they operated at increased levels of TE for Instructional Strategies/Skills. The reasons for the differences between Case 2 and 3 versus Case 1 will be discussed further in the Conclusion section.

2. Effect of the PD on TE for classroom management

The effect of the PD on teachers’ TE for Classroom Management with respect to musical play varied amongst teachers and cases. Some teachers who already had high TE for classroom management, did not experience any disruptive behaviours, nor did they run into difficulty in correcting children throughout the PD. Others reported they needed to correct children regularly for playing too loud or intentionally or unintentionally breaking musical instruments, creating frustration. These outcomes were supported by the quantitative data, which also suggested a mixed picture. In Cases 1 and 2, outcomes showed that for the majority of the teachers, their TE for Classroom Management remained constant, with $p < .317$ and $p < .180$, respectively. In Case 3, the majority of teachers showed increased levels of TE, though not reaching a level of significance ($p < .059$) which may have been due to the negative effect of relocating their music areas, as will be explained below.

3. Effect of the PD on TE for student engagement

In the current study, Student Engagement (SE) relates to an ability to motivate children for musical play. In all cases, most teachers indicated they had learned how to give input to children’s musical play to keep them motivated.

Two possible factors, however, were found that may have negatively impacted on the acquisition of TE for SE in some participants. The first factor concerned children’s interest in musical play. Even though the observation of children’s musical play and subsequent input had been practiced and discussed, at least one teacher in each case had encountered children that remained uninterested in

musical play, regardless of her input, which probably impacted negatively on their TE for SE. A second factor related to the grouping of children. Case 3 teachers initially created a shared music area, in which a mix of children from all of these teachers' groups played together. Most children did not know each other, nor did the teachers know most children (by name or other specifics). Guidance, therefore, became complicated and frustrating, which might have impacted negatively on teachers' TE for SE. From then onwards, each teacher created her own music area.

Despite these inhibitory factors for some teachers, analysis of the quantitative data suggests that in all cases, teachers' TE for Student Engagement increased, with significant outcomes for Case 2: $p < .042$ and Case 3: $p < .041$, but non-significant for Case 1 ($p < .109$).

4. TE for music education in general

In both the pre-intervention survey and in the initial conversations, 50% of the participants reported initial low levels of TE for music education in general (Case 1–3 teachers out of 4 (3/4); Case 2–3/5 and Case 3–1/5). Post PD measures, however, indicated that participation in the PD produced a positive impact on their TE for providing music education in general:

'For me, I don't consider myself as 'musical', as in: being a good singer, or playing a musical instrument. But with respect to music education, I now feel this is something I am capable of. Much more than before!'

(Case 1, interview D.)

'What I love so much: I féél it! I always thought: 'I am not musical; I can't do this . . . ' But I was completely in my element – enjoying children's activities so much. It seems to go by itself. I just feel proud, that it's me who's doing this with music'.

(Case 2, interview S.)

Furthermore, teachers in all cases reported on the various benefits of musical play for their regular music education. First, the offering of musical play in addition to regular music education, gave children more time and space to engage with music. Second, autonomous music play was found to be more in line with the way young children learn, namely by experimenting and discovering, which is difficult to achieve in regular, whole group-based music education. Third, engagement with musical play provided teachers with further insights into children's (musical) development and, due to the PD, a more acute recognition thereof. Finally, several teachers from cases 2 and 3 indicated that, as a result of their engagement with musical play, they had begun to give more space to children's musicality and creativity in their regular, whole group-based music education and had become less directive.

Finally, in order to investigate a possible effect of contextual factors, such as age and years of experience on teachers' acquisition of all forms of TE, a Mann Whitney test, was performed on all related data. Whilst the quantitative data produced a number of significant results, in all cases, teachers' age and years of experience proved not to be a significant factor.

RQ 2: What design features of the PD have been effective in teacher's development of TE?

Teacher rounds

A specific design feature of the PD was the teacher rounds, in which the PD trainer (PDT) provided some support for teachers in situ. In all cases, the PDT had indeed been able to support several teachers in their scaffolding of musical play. Analysis of the qualitative data highlighted how participants had experienced this support positively. Demonstrations of scaffolding actions by the PDT and her feedback on their own were appreciated and appeared to have contributed to an increase in their TE for Instructional Strategies/knowledge and skills. However, lack of time and large group size seemed to make this part of the PD less successful. Nevertheless, the rounds did provide the required insights into the ZPD of the teachers and children, resulting in the demand-driven changes to the PD's content.

Collective participation

All Case 1 and 2 teachers experienced their joint participation positively. They indicated that observing each other's actions and discussing children's musical play had inspired and motivated them, leading to mutual learning and in particular to teachers' TE for Instructional Strategies and Student Engagement:

'The other day we discussed musical play in a team meeting. D. explained how she made video recordings of children's play and had the children watch them. W. then suggested to make an audio recording instead, as video recordings will trigger children to mainly watch instead of listen. This got D. thinking, upon which she changed her approach. They now listen first, without image, and watch later'.

(Case 1, interview E.)

'I thought it was really great, for several reasons. We all experienced the same thing, so we talked about it and stimulated each other along the process. And when someone did something that got us all excited, we then used that idea too. So we learned from each other'.

(Case 2, interview R.)

An inhibiting factor in the development of TE, however, appeared to be part-time employment. Case 2 and 3 teachers were employed in a job-share with a 'duo partner'-, who had not participated in the PD as this took place on their non-working days. Although the participating teachers regularly updated their duo partners, this proved insufficient in preparing the latter for the task of scaffolding children's musical play. As a result, they paid little or no attention to children's musical play, causing the participating teachers' inputs to be discontinued for parts of the week. This appears to have negatively affected the continuity of the musical play, and thus, to some extent, the levels of TE for Student Engagement.

Longer duration

The PD took place over a six-month period, which proved to have a positive impact on all music teaching abilities, by allowing teachers to experiment with various play areas (e.g. area with musical instruments, notating music, dancing or listening) and to practice associated scaffolding skills, which appeared to positively impact on their overall TE.

Active learning

Teachers in all cases reported being stimulated by and learning from actively practicing musical play within the PD sessions:

'That time we played with pieces of coloured fabric: that works for me. I'll never forget that. Or the shadow screen: just five minutes of dancing behind it makes you think: 'I'm going to do that too!' It also helps you remember it'.

(Case 2, interview K.)

Active learning therefore, seems to have had a positive effect on TE, particularly for Instructional Strategies/Knowledge and Skills.

Quality of input

Teachers from all cases indicated that they had derived a concrete, recognisable, and informative image of musical play from the teaching materials and had learnt how to scaffold it.

This, in turn, seemed to have positively affected teachers' TE for Instructional Strategies/Knowledge and Skills:

'The materials we were supplied with were very helpful. They explain everything briefly and clearly and its content is practical and easy to implement'.

(Case 2, interview R.)

'The phases within musical development as described in the materials: they really exist - I can see them happen before my eyes!'.

(Case 3, open-ended questionnaire E.)

Finally, many teachers indicated that the materials (especially the cards) had contributed to their autonomy: not only had they been useful during the course of the PD, they also expected them to be of support after the PD, when facilitating and scaffolding musical play by themselves. This appears to have had a positive effect on all forms of TE.

Conclusion

The aim of the present research was to examine the impact of a PD-program on the levels of TE for facilitating and scaffolding musical play in EY teachers and to better understand which design features of the PD were most effective. The research employed a mixed-method exploratory multiple-case study with three cases, differing from each other with regard to the role of play in their curriculum.

Outcomes of the study

Research question 1, sought to identify what effects a PD-program on musical play might have on teachers' efficacy (TE) for musical play and for music education in general. We concluded that our PD-program mostly affected the level of TE for Instructional Strategies, Knowledge-Skills and Student Engagement and to a lesser extent for that of Classroom Management.

In common with findings by Barrett and Tafuri (2012) and St. John (2006), all teachers appeared to be able to provide an educational environment rich in musical opportunities, where children could play for prolonged periods (Bartel and Cameron 2007; Dansereau 2015). Only one case 2 teacher was unable to do so due to lack of suitable space, which negatively affected her learning throughout the PD, marking the conditionality of this basic facility for learning. As a result of the PD-program, teachers acquired general knowledge about children's musical activities and development, learned to identify children's musical intentions and to identify subsequent needs in their own practice (Young 2005; Smith & Montgomery 2007). This translated into an increase in their TE for Instructional Strategies/Knowledge. From this knowledge, teachers actively worked with their groups and thus acquired skills related to observing and supporting musical play, leading to increased levels in their TE for Instructional Strategies, and significantly so for cases 2 and 3.

Most literature on musical play describes scaffolding as active teacher involvement in the musical play of individual or small groups of children (e.g. Young and Glover 1998; St. John 2006), and therefore this approach was taken to be central to the PD-program. In practice, however, with one exception, all teachers indicated they lacked the time required to scaffold children's play in this way; mainly due to group size (see Rogoff 1990; Myhill and Warren 2005) and, for case 2 and 3 teachers, due to their part-time employment. Therefore, to enable (some) guidance, case 1 & 2 teachers used non-participant (video) observations after school time, providing them with some idea of children's interests and needs, and they devised alternative ways of (whole-group-) scaffolding. These alternative scaffolding actions expanded the children's play repertoire and supported them in its independent use (Carroll 2007; Wiggins 2015) and also provided children with a social context in which to communicate both verbally and musically (St. John 2015) whilst discussion of children's musical play contributed to them acquiring further musical language (Young and Glover 1998; Wiggins 2015). These self-invented, practice-based forms of scaffolding, therefore, enabled teachers to guide children's musical play, which may explain the increase in their TE for Instructional Strategies – Skills.

One disadvantage with these alternative forms of scaffolding must be noted. Teachers were not actively involved in children's play, which prevented them from participating and responding as 'observer-collaborators' (St. John 2006) or 'co-players' (Koutsoupidou 2020). Consequently, they lacked specific insights into the ZPD of individual children, leading to little contingent individual support. Two following phases of scaffolding, 'fading' and 'transfer of responsibility' (Van De Pol, Volman, and Beishuizen 2010) were addressed somewhat more in this approach, albeit aimed at the entire group, and also quite abruptly: *'Go try it yourselves now, and I'll drop by later to have a look'*. These findings seem to indicate that to successfully support children's musical development

within musical play, alternative means of scaffolding that fit within their (limited) time frame are needed, including actions that entail fading and transfer of responsibility. When developing PD programs on musical play these are points to be taken in consideration, and they also highlight the need for further research.

Finally, it was surprising that although Case 3 teachers did not devise and implement any alternative forms of scaffolding, they did show the most significant increase in TE for Instructional strategies/Skills. This might be explained by the fact that, due to their strongly cognitive-oriented curriculum, these teachers were less experienced in scaffolding play and therefore possibly had more to learn than Case 1 teachers, who were already experienced in guiding play in general. We therefore argue that any PD on musical play may be equally valuable for teachers, regardless of their prior experience in facilitating and supporting early childhood play, and apart from the effectiveness of their efforts for children's development in musical play.

With respect to the two remaining forms of TE, the effect of the PD on levels of TE for Classroom Management appeared negligible for Case 1 & 2 teachers, who occasionally experienced undesirable behaviours by children, particularly when playing with musical instruments. This is in line with findings by Zachariou and Whitebread (2015), who suggested that this form of play requires the most self-regulatory behaviours from children. From the outset, however, teachers appeared to have little difficulty in correcting children. Teachers also indicated they had learned how to keep children motivated for musical play, which positively affected their TE for Student Engagement. This, however, did not apply to Case 3 teachers, -who experienced problems with children's behaviours, resulting from their initial unsuitable communal music area-, that didn't sufficiently support children's play, and negatively affected children's involvement. Collective musical play may lead to shared musical experiences (St. John 2015) and peer mediation (Bartel & Cameron, 2007; Whiteman 2008; Wiggins 2015), but this was prevented from happening due to this communal setting in which most children and teachers were unknown to each other. This negatively impacted children's play, and thereby levels of TE for both Classroom Management (CM) and Student Engagement (SE). Only after each teacher offered a music area in their own classroom, did their TE levels increase. These findings seem to indicate that familiarity between teacher and children is an important precondition for musical play to flourish. Furthermore, it could be assumed that TE for SE and CM are related: without TE for SE it is difficult to keep children involved, without children's involvement unwanted behaviours can arise, which in turn negatively affect teachers' TE for CM.

Finally, prior to the PD, 50% of the participants emphasised their lack of confidence in teaching music in general. However, upon termination of the PD, participants clearly acknowledged how the PD had helped them develop confidence in teaching music, thereby confirming the results of previous research by Barrett, Zhukov, and Welch (2019).

The second question in this study sought to identify what design features positively affected levels of TE for musical play. Our outcomes suggested that, in accordance with those obtained by Birman et al. (2000), Desimone (2009) and Van Veen et al., (2010), collective participation in the PD led to interactions, discussions, and feedback among teachers, which positively affected TE, especially for Instructional Strategies and Student Engagement. Active learning, as advocated by Desimone (2009), was central to the PD

both during PD sessions and in practice. This enabled teachers to gain mastery experiences that proved crucial for the development of their self-efficacy (Bandura 1997) and all forms of teacher efficacy (Tschannen-Moran and Woolfolk-Hoy 2001).

The extended duration of PD also suggested by Desimone (2009), allowed teachers time needed to gain and share these experiences, which proved to be an important condition for active learning. Also, in accordance to findings by Tschannen-Moran and Woolfolk Hoy (2006); Bismack et al. (2015), the teaching materials were based on theory and well-documented, evidence-based practice, resulting in teachers perceiving them as recognisable and practically applicable. They contributed to teachers' autonomy (Grossman and Thompson 2008; Davis and Krajcik 2005) which seems to have positively affected their TE, especially for Instructional Strategies – Knowledge and Skills.

A significant, and ineffective feature of the PD's design, was the school visits occurring during school time. Although being informative for the PD teacher with respect to the learning needs of both teachers and children, teachers appeared to lack time and attention for the intended teaching on the job. When repeating this PD program, a solution should be sought for this problem.

Discussion

This paper reported on the effects a professional development program (PD) on musical play can have on the teacher efficacy of early years teachers with respect to musical play and to music education in general. Our results suggested that by participating in this PD, teachers gained increased levels of teacher efficacy for musical play, mostly in the area of instructional strategies and of student engagement, with 50% of them indicating to have also gained confidence in teaching music as a whole.

Literature has argued that musical play can also be of benefit for the musical development of young children, an insight shared by many participating teachers. Unlike teacher-led, classroom-based musical activities, children can learn about music and about themselves as a musician by means of play. Musical play, therefore, seems to be of added value for both parties. Previous research, however, found that many teachers were unaware of the existence of musical play or had no knowledge of how to facilitate it (Nieuwmeijer, Marshall, and Van Oers 2019). We therefore assume that both in-service and preservice teachers can benefit from training in this area.

In such a case when musical play is offered as an in-service training activity, the results of this current study show that collective participation, active learning, extended duration, and qualitative curriculum materials can contribute to an increase in teachers' TE for musical play. We therefore recommend future training in this area to be based on these characteristics.

When delivering a pre-service program, music teachers involved in teacher education would be expected to be experienced in facilitating musical play. As we are unaware as to whether or not this is the case, nor where these teachers should have gained such experiences (conservatory, practice), we suggest additional research into this topic, and (in case training proves necessary) into how such training should then be designed.

Finally, this research was completed over a six-month period. It would be of further value and interest to investigate the long-term effect of this training on teachers' TE with regard to musical play, and to what extent they have incorporated musical play into their music curricula.

A limitation of this study may have been the possible repetition of respondents' scores on the teacher efficacy questionnaire. However, we assume that the intervening period of 2 months was sufficient to rule out any effect of this. Then, with respect to validity, it was surprising that in the survey, Case 3 teachers rated available time positively, but indicated experiencing a lack of time in the qualitative data. The reason for this inconsistency remained unclear, but one possible explanation may lie in the wording of the survey statements that may have been insufficiently explicit or in a more psychological factor. For example, Goddard, Hoy, and Woolfolk Hoy (2004) found that in general, people tend to overestimate their actual abilities, which can affect questionnaire responses.

Further, results of this study indicated that the PD enabled teachers to learn how to facilitate and scaffold musical play, which positively affected their TE and enhanced their overall music educational offerings. However, given the 33 hours of PD per school, the transferability of a PD-program as used in this study may be less feasible in practice in terms of time investment and costs. As much PD-time was used for the intended teaching on the job (which ultimately appeared to be unfeasible), a different, less time-consuming (online) way to follow participants' progress and learning needs could be used, reducing costs and thereby increase the program's feasibility.

Notwithstanding these limitations, it was worth exploring the relatively small sample, given the relatively limited research previously carried out on this topic, and we argue that the study offers a number of valuable insights into the practical applicability of musical play for EY teachers and its effects on their TE. We would strongly advise practitioners and teacher educators to consider creating space for musical play in their curricula; not only to increase teachers' TE but also to achieve the ultimate goal: an enhancement of early years music education in which children can learn about music by means of play.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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