



Effects of a Professional Development Program Designed by Speech-Language Pathologists Targeting the Use of Vocabulary Strategies in Preschool Teachers: A Pilot Study



Les effets d'un programme de développement professionnel conçu par des orthophonistes et ciblant l'utilisation de stratégies soutenant l'apprentissage du vocabulaire chez les enseignants du préscolaire : une étude pilote

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Edith Kouba Hreich
Camille Messarra
Trecy Martinez-Perez
Christelle Maillart

Edith Kouba Hreich^{1,2},
Camille Messarra^{1,2}, Trecy
Martinez-Perez², Christelle
Maillart²

¹Saint Joseph University of
Beirut, Higher Institute of
Speech and Language Therapy,
Beirut, LEBANON

²Research Unit for a life-Course
perspective on Health &
Education, University of Liège,
BELGIUM

Abstract

This study focuses on the ways speech-language pathologists can teach preschool teachers to implement vocabulary learning strategies in the Lebanese multilingual context. A multiple-baseline single-case experimental design was applied with direct individualized on-site intervention with four teachers. Specific individualized targets in vocabulary strategies were assessed across the implementation through an interactive book-reading activity. The results showed (a) a low use of vocabulary strategies during the baseline phase among preschool teachers, confirming the need for support in the field; (b) a change in the teachers' use of strategies taught by speech-language pathologists, highlighted by the immediate increase in the use of vocabulary strategies; and (c) the impact of the intervention, illustrated by the lack of increase in nontargeted strategies. Our findings therefore help in promoting the implementation of language support programs actively involving speech-language pathologists and preschool teachers in collaborative work to support children in learning new words.

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La présente étude porte sur les moyens pouvant être utilisés par les orthophonistes pour amener les enseignants du préscolaire à mettre en œuvre des stratégies d'apprentissage du vocabulaire dans le contexte multilingue libanais. Un devis expérimental à cas unique et à niveau de base multiple a été mis en œuvre afin d'évaluer l'impact d'une intervention directe et individualisée offerte sur place à quatre enseignants. Des cibles spécifiques et individualisées de stratégies d'apprentissage du vocabulaire ont été évaluées tout au long de la mise en œuvre du programme de développement professionnel au moyen d'activités de lecture interactive. Les résultats ont montré (a) une faible utilisation de stratégies soutenant l'apprentissage du vocabulaire chez les enseignants du préscolaire avant la mise en œuvre du programme de développement professionnel (confirmant ainsi le besoin de soutien sur le terrain), (b) un changement dans la pratique des enseignants qui était spécifique aux stratégies enseignées par les orthophonistes (utilisation augmentée et immédiate des stratégies de vocabulaire) et (c) un impact de l'intervention qui s'illustrait par une utilisation non augmentée des stratégies n'ayant pas été ciblées dans le programme de développement professionnel. Les résultats de l'étude contribuent donc à promouvoir le travail collaboratif et la mise en œuvre de programmes de soutien langagier impliquant la participation active d'orthophonistes et d'enseignants du préscolaire, et ce, afin d'aider les enfants à apprendre de nouveaux mots.

Oral language is considered critical in early childhood development to prepare children for school readiness. More specifically, vocabulary plays a major role in developing conceptual knowledge in all children and is known to be a strong predictor for learning to read and reading comprehension (Ramsook et al., 2019). Moreover, in preschoolers at risk of developmental language disorder, vocabulary size predicts treatment effects and outcomes (Kapa & Erickson, 2020). There is also considerable evidence that vocabulary remains one of the most difficult areas to learn, especially for children growing up in multilingual contexts (Hamayan et al., 2013). Exposure to different languages by teachers on one hand and caregivers on the other hand amplifies the difference in vocabulary size in each of the children's languages. Some words may only be encountered at home, in one language, and others may only be used at school, in the school language (Bialystok et al., 2010). Therefore, children from multilingual backgrounds may not have equivalents for every word in their languages (Bialystok et al., 2010), especially for academic content-related words (sciences, mathematics, social sciences, etc.). Thus, for preschool dual language learners (DLLs), who are still developing their first language while acquiring a second language (L2) which is the language of instruction (Goldenberg et al., 2013), learning words in L2 takes a considerable amount of time and requires repeated exposure to both frequent and infrequent words. Hence, preschool teachers (pre-KTs) must intentionally support vocabulary learning among DLLs in their L2 to better prepare them for reading and comprehension in their L2, and to enable them to learn new words through reading (Carlo et al., 2004). Moreover, when given appropriate instruction at preschool, DLLs are able to learn new words easily and even sometimes faster than monolinguals, especially when provided with various strategies to develop their vocabulary (Silverman, 2007).

Book Reading as a Recognized Approach for Enhancing Vocabulary Learning

Shared book reading is a commonly used classroom activity. It helps to support vocabulary learning in preschoolers and is usually associated with language gains (Mol & Bus, 2011). It can be adapted to match the language needs of heterogenous groups of children and can also support a strategic integration of new vocabulary in DLLs (Fitton et al., 2018). Indeed, classroom-based book-reading activities give children contextually embedded exposures to new words, where teachers are likely to engage in interactive talk about words using several strategies: selecting a word and providing a definition or a synonym, repeating words to emphasize them, asking children to repeat a word together, asking referential questions to elicit a predetermined word

and inferential questions relating words to the children's own experiences, and prompting sentence completion (Biemiller & Boote, 2006; Dunst et al., 2012; Gerde & Powell, 2009; Milburn et al., 2014). Thus, a shared book-reading approach helps children to engage in verbal interactions with their teachers, enabling the latter to use teaching strategies that support connections between new words and the children's own experiences, and, therefore, to accelerate content-related vocabulary learning (Neuman & Dwyer, 2011). Such strategies are effective at optimizing vocabulary growth within planned instruction, even in small doses (Goldstein et al., 2016), and at various developmental stages (Zipoli et al., 2011). The use of interactive strategies to support vocabulary learning in the language of instruction is also effective for children with limited oral language abilities (Cabell et al., 2019), as was the case for a large number of children in our study.

Challenges of Using Vocabulary Strategies in Preschools

There is a growing concern that preschool children receive less than the optimal amount of vocabulary exposure during their school day. Many pre-KTs fail to provide high-quality language practices, despite access to training and instructional tools (Dickinson & Porche, 2011). Current teacher practices do not appear to be designed to promote exposure to a rich vocabulary, that is, teachers often do not use strategies that introduce young children to new words and "engage them in meaningful contexts through semantically related activities" (Neuman & Dwyer, 2009, p. 384). Descriptive studies carried out in preschools showed that teachers produce directive language, which provides few opportunities for children to engage in meaningful dialogue (Dickinson, 2011). Research has also shown that early childhood teachers spend an average of only 5 min per day on explicit vocabulary instruction (Beck & McKeown, 2007; Cunningham et al., 2009), which leaves little opportunity to involve children in learning a new, literary, and enriched vocabulary. In a paper presented by Gillanders et al. (2014), teachers usually asked open-ended questions. However, they did not engage the children in conversations that would increase their opportunities to use the vocabulary they had heard or talk about their ideas. The children were therefore unable to discuss concepts and new words that would have expanded their knowledge or helped support their vocabulary growth. Children effectively need repeated and meaningful exposure to words to learn them. Repeating words in isolation and memorizing them in insignificant contexts is not enough. Thus, young children should be given the opportunity to be exposed to new words, multiple times, in meaningful contexts, so that they can associate a word with its meaning and understand how to use it to communicate with others (Biemiller & Boote, 2006; Hoff, 2003).

This situation also becomes more challenging when the language of instruction in school is not the home language, especially when the children come from a variety of language contexts and the teachers have little knowledge of the children's sociocultural experiences. Given the various demands in bilingual preschools, it is not so easy to focus on language use (Gillanders et al., 2014). This is also the case when it comes to teaching in an L2. Teachers' possible lack of proficiency in the language of instruction may hamper their ability to improvise or to meet children's language needs to increase their word knowledge, or it may prevent useful digressions (Richards et al., 2013). Thus, DLLs, who come from a more isolated linguistic environment, may receive their first exposure to complex and conceptual words in their language of instruction only in preschool (Figueras-Daniel & Barnett, 2013). It is therefore important for DLLs, who are mainly in their first year of schooling, to be provided with both an explicit teaching of words (e.g., selecting and defining words and providing visual prompts) and developmentally appropriate incentive practices for learning vocabulary. Hence, they can be supported in their L2 within contexts where pre-KTs can provide multiple opportunities to hear and learn more complex words (Milburn et al., 2014).

Multilingual Challenges of Preschools in Lebanon

The Lebanese school context is characterized by considerable linguistic diversity. Although Lebanese is spoken by most children in preschools, all children are DLLs and their teachers are usually bilingual. Lebanese is usually their first language and the school language of instruction their L2. At the start of preschool, academic content learning is provided in the L2, that is, English or French, and sometimes both, along with modern standard Arabic, which is usually not used for everyday communication. Hence, preschool children usually receive 22 to 23 hr of exposure a week to their L2, and 7 to 8 hr to modern standard Arabic. Considering the multilingual/bilingual instruction, children and their teachers must adapt to challenges related to L2 learning to optimize literacy attainments and academic achievements. First, children must develop a sufficiently broad vocabulary in their L2 to be efficient readers and communicators. Second, Lebanese pre-KTs must be proficient enough in using language strategies in their L2 to be able to provide high-quality language input. However, major disparities in language teaching levels that affect the use of appropriate language practices are reported among Lebanese schools. Differences are related to shortcomings in the teachers' level of language proficiency and training (Shaaban, 2013; Sreih & Azar, 2020). They often must interact with children in the L2 (French or English) even though they have not mastered it. Poor language

proficiency among teachers results in more directive language practices and less diverse vocabulary use (Esseili, 2014). Therefore, multilingual schools in Lebanon provide a unique context for studying vocabulary learning in preschool DLLs who would benefit from vocabulary learning opportunities through meaningful interactions between children and their teachers.

Strengthening Pre-KTs' Skills to Support Vocabulary Development

Given the heterogeneity of language support practices used by teachers (Wasik & Hindman, 2020) and the shortcomings in the domain of language and communication observed during their initial training (Moats, 2009), teachers clearly require support to enable them to implement integrated strategies in interactive reading activities that allow children to develop their vocabulary. Therefore, professional development (PD) programs have been set up to help teachers improve their practices that support the development of vocabulary (e.g., Hindman & Wasik, 2015). This approach consists of facilitated teaching and learning experiences designed to support the acquisition of knowledge and skills and their application in practice (Elek & Page, 2019). Teacher training in supporting vocabulary learning through meaningful increased vocabulary-enhancing behaviours (asking open-ended questions, providing definitions and meaningful feedback), is therefore a priority (Wasik & Hindman, 2020). This is particularly relevant in multilingual contexts where teachers tend to use limited language support with low word complexity (Ping, 2014). For teachers to promote vocabulary learning among DLLs, they have to be aware of the language they use. They must provide multiple occasions for learning new and specific words and make explicit connections with the experiences of DLLs (Gillanders et al., 2014).

The literature has identified active ingredients that are important for effective PD programs to help teachers learn strategies for supporting vocabulary in DLLs. These programs also support the development of reflective practice in teachers and change in their perceptions of themselves and their practices (Bleach, 2014). It is important for teachers to "step out of being a teacher" by reconsidering their role as a communication and language partner (Boyd, 2014, p. 441). Considering the above-mentioned requirements, it is therefore necessary to know more about how teachers interact with children and, more importantly, how to support their students in practice (Pence et al., 2008), especially when they need to make intentional efforts in the way they talk in the language of instruction (Gillanders et al., 2014).

One key feature of effective interventions is to combine modalities aimed at enhancing the use of language techniques to promote language learning in children (e.g., courses, workshops, on-site coaching, communities of practice; Markussen-Brown et al., 2017), and to provide teachers with facilitators who can scaffold their attempts to understand new ideas and use new language strategies (Cunningham et al., 2015). Many authors (Rogers et al., 2020; Schachter et al., 2019) have identified key elements for the successful outcome of a PD program: (a) programs should be based on a participatory active learning process where the teachers' involvement is requested during a knowledge and content-sharing session; (b) program content should be consistent with teachers' knowledge and instructional needs as well as their linguistic environment, with specific time allocated to reflection and feedback; (c) interventions must be built on real contexts; and, finally, (d) the duration, frequency, and intensity of the intervention must be sufficiently high (up to 30 hr but not less than 10–14 hr; Jensen & Iannone, 2018). Although a 14-hr PD program was not found to bring about any changes in teachers' practices in some cases (Yoon et al., 2007), further work has demonstrated that around 20 hr of PD can be effective when the training dosage is spread over time rather than given in one go, thus allowing teachers time to practice strategies in their own environments (Desimone, 2009). Although there is limited research on the most effective dosage of PD needed to bring about changes in teachers' practices (Weber-Mayrer et al., 2018), it can be argued that it is necessary to engage in continuous PD programs that provide teachers with the best opportunities to learn and practice new skills.

Coaching is therefore one form of individualized professional learning that has become increasingly documented in the literature (Pianta et al., 2021; Wasik & Hindman, 2020), with the potential to improve both teachers' practices and children's outcomes (Snyder et al., 2015). Coaching interventions usually involve a more experienced professional providing individual on-site support for a teacher within a collaborative partnership. Elements of coaching usually include modelling, feedback, reflection, and goal setting in a collaborative and nonjudgmental partnership. In this context, a study by Neuman and Wright (2010) examined the impact of two forms of PD programs including coursework (30 hr) and on-site coaching (3 hr a week for 10 weeks). Analyses revealed significant substantial improvements in the on-site coaching group. On-site coaching allowed teachers to engage in self-reflection and engage critically in new content and its relevance for their daily language practices. The study also highlighted two core elements of coaching:

(a) the importance of a collaborative practice between the coach and the teacher, and (b) shared mapping actions (planning, implementing, and engaging jointly in analyzing outcomes of selected targets).

Hence, in a preschool context, experienced language professionals, such as speech-language pathologists (S-LPs), could also play a key role in delivering PD sessions to teachers to support their use of language development strategies. The pre-KTs could then implement these strategies themselves (Archibald, 2017). S-LPs' expertise in monolingual or multilingual development and disorders would perfectly complement the pre-KTs' expertise in curriculum activities, classroom organization, and child learning management. The implementation of a PD program targeting pre-KTs, delivered by S-LPs, would meet the need for increased focus on appropriate language interactions in early childhood. It would provide the opportunity for S-LPs' indirect interventions to be grounded in naturalistic contexts with all children (Ebbels et al., 2019).

Studies have already demonstrated the effectiveness of PD programs targeting language practices delivered by S-LPs to teachers, many of which use book-reading activities (e.g., Girolametto et al., 2012; Namasivayam et al., 2015; Rezzonico et al., 2015). Although coaching is widely used and considered an effective adult-learning strategy, especially when it is combined with performance feedback, several areas warrant further exploration.

First, a deep understanding of coaching features and how they function to reflect a change is required. Second, content strategies remain unclear, as well as coaching processes and their dosage (Biel et al., 2020). Moreover, there are still few studies on PD programs targeting language skills in multicultural and multilingual contexts. Most studies have been conducted with English-speaking monolinguals or DLLs (Neuman & Dwyer, 2011); hence, the promotion of effective vocabulary strategies has been carried out in English (in most published studies) among teachers who were mostly native speakers. To date, we have little data on how to support teachers in the use of vocabulary strategies in the language of instruction for DLLs. This seems to be particularly challenging for teachers. Studies reveal that the limited support DLLs receive in their language of instruction may sometimes be partly attributed to teachers' low language expectations and less opportunity for higher order thinking within their interactions with DLLs (Langeloo et al., 2019) as well as the teachers' proficiency in the language of learning (Richards et al., 2013). It is therefore worth exploring the question of transferring or adapting studies conducted in other contexts (e.g., American) and in English, to other linguistic and cultural environments. Consequently,

identifying consistent implementation practices adapted to various contexts is needed. Optimizing S-LPs' intervention productivity in real contexts would help to determine the most effective procedures or combination of procedures targeting language practices in preschools (Biel et al., 2020).

Supporting Vocabulary Development Through Indirect S-LP Intervention

The program we designed sought to support language development in DLLs through a preventive tier-one type intervention (Ebbels et al., 2019). Its implementation consisted of S-LPs teaching pre-KTs specific targets in vocabulary-promoting strategies, which the teachers would then be able to use to enhance vocabulary learning in DLLs. The goal was to target language development in children.

In our study, two S-LPs tested instructional training targeting vocabulary strategies for pre-KTs in situ. The design used the four coaching functions described by Biel et al. (2020): (a) sharing information (why and how to use intervention techniques), (b) modelling intervention techniques in situ, (c) guiding or prompting the use of the techniques and, (d) providing feedback on the accuracy of use of the targeted technique. A participatory active learning process allowed pre-KTs to reflect on their practice, think critically about the new content, and coidentify specific PD targets (Dunst & Trivette, 2009). The aim of this process was to allow teachers to use the targeted vocabulary strategies they were taught during the monitored story-reading activities and generalize them to other situations and curricular activities in class.

Aims of the Study

The aim of the intervention was to increase the pre-KTs' use of the vocabulary development strategies with DLLs. The expected outcomes would then be analyzed in terms of pre-KT frequency of use of the strategies and their satisfaction with the program. The following research

questions were addressed within a single-subject multiple-baseline design study:

- Is this implementation effective in increasing pre-KTs' use of taught vocabulary strategies?
- Do the intervention's effects extend to strategies that the pre-KTs have not been taught?

Method

Participants

Four pre-KTs (referred to as participants [Ps], P1–P4) were recruited on a voluntary basis from two private Lebanese French schools, one in the heart of Beirut and the other located 35 km north of Beirut. Pre-KTs and their classrooms were selected according to a sample of convenience. The four female teachers ranged from 27 to 47 years of age. Three of them – P2, P3, and P4 – were bilingual in Lebanese and French (with French as their L2) and had a teaching diploma (2-year course), and one teacher (P1) was only French-speaking and had a university degree in sociology (see **Table 1**). They had between 2 and 25 years of preschool teaching experience. They were all teaching in French. However, only P4 stated having equal proficiency in Lebanese and French. Most children were Lebanese bilinguals, with French as their language of instruction.

Two experienced S-LPs, both bilingual (Lebanese/ French) and fluent in French, delivered the training program to the teachers. They each had over 20 years' experience in clinical practice as well as adult education.

Design and Procedure

This study used a multiple-baseline design across participants and met the single-case design standards as explained by Kratochwill et al. (2010). It was approved by the Research Ethics Board of Saint Joseph University of Beirut (# USJ-2017-62) and University of Liège (# 1718-28).

| Pre-KT | Age (years) | Experience (years) | Holds teaching diploma | First/second language | Grade | Number of children |
|--------|-------------|--------------------|------------------------|-----------------------|-------|--------------------|
| P1 | 40 | 2 | No | French | KG2 | 20 |
| P2 | 47 | 25 | Yes | Lebanese/French | KG2 | 27 |
| P3 | 46 | 26 | Yes | Lebanese/French | KG1 | 23 |
| P4 | 27 | 5 | Yes | French/Lebanese | KG1 | 23 |

Note. P = participant; Pre-KT = preschool teacher; KG1 = Kindergarten 1 (for children aged 3–4 years); KG2 = Kindergarten 2 (for children aged 4–5 years).

Due to the small sample size, this study followed a basic single-case within-subject design, with repeated measures, across two conditions referred to as phases (baseline [BL] and intervention phases; Kratochwill et al., 2010). Each participant was considered a case for data analysis and acted as their own control for comparison purposes. This design represented a clinically straightforward option to combine practice with research. It was also applicable to our implementation process through its staggered introduction across a particular parameter. Outcome variables (vocabulary strategies) were measured repeatedly within and across different conditions, where each one was considered independently. The first phase of the design, prior to the introduction of a specific variable, which would be the BL later on, permitted information to be gathered about the pre-KTs' use of specific targets (Kratochwill et al., 2010). This experimental design helped determine whether a link existed between an independent variable (research-manipulated intervention targets) and dependent variables (changes in participants' frequency of use of vocabulary strategies in our study). Considered as flexible and adaptive, the single-case design was driven by our research questions and was particularly appropriate for understanding the responses of one or more cases, considering the heterogeneity of practices and participants as well as the novelty of this kind of intervention for both S-LPs and pre-KTs in the Lebanese context.

Prior to implementation, a 3-hr workshop about how to promote general positive language strategies was provided to all pre-KTs in each school. Afterwards, S-LPs met the volunteer participants individually to explain the purpose of the study. They also visited the targeted classrooms in order to better understand their organization and to allow the children to familiarize themselves with the presence of the S-LPs. Afterwards, S-LPs met pre-KTs individually to schedule the intervention.

The intended design of the study was initially scheduled over 14 weeks, including pretest and posttest measurements (BLs, Week 1, and Week 14), as well as six coaching cycles per teacher (Weeks 2–13). Each cycle lasted approximately 2 hr for a total estimated duration of 24 hr (2 hr a week over 12 weeks). However, the intervention was interrupted after 10 weeks due to the Covid-19 crisis.

Implementation was conducted in French, the school's language of instruction, over four to five coaching cycles per teacher. Each target strategy was separately taught by S-LPs following several instructional steps. The choice and organization of the instructional steps within a cycle were based on Dunst's (2015) and Biel et al.'s (2020)

metasynthesis of in-service PD programs. Findings from their studies identified four teaching functions that were used for each cycle: sharing information, modelling the targeted strategy, guiding/scaffolding the target strategy's execution and providing feedback about the performance, and reflecting on observations with the teacher. Their purpose was to draw the pre-KTs' attention to the specific targets, to help them be aware of their own language behaviour, to identify links between changes in their use of language strategies and the children's engagement, and to analyze alternatives to some language behaviours. Specific components of the procedures and time allocated for each stage are detailed in **Table 2**. Field notes were also used to record information on the teachers' practices, perceptions, and insights during information-sharing and feedback stages. Implementation was initially designed over 14 weeks, including BL sessions followed by 12 weeks of intervention.

Book and Word Selection

The books used contained narrative French stories, close to Lebanese children's interests and cultural knowledge, selected at the appropriate level from the *Minimax* collection published by *l'école des loisirs*. They had at least four story elements (out of settings, characters, problem, goal, solution, and end), comparable in terms of text complexity, length, and illustrations: Each book was approximately 20 pages long, with at least 12 opportunities to elicit the target strategy. A script was prepared by S-LPs for each strategy per book to ensure accuracy in modelling it with preselected words and to guarantee fidelity to this aspect of the implementation. However, scripts were not given to the teachers. Participants had the freedom to choose the words for instruction.

The vocabulary strategies were selected based on a review of the literature on interactive practices to promote new word learning in preschoolers (Biemiller & Boote, 2006; Gerde & Powell, 2009; Milburn et al., 2014): defining a new word, repeating, promoting child chiming, completing prompts, and indirect strategies including literal questions, inferential questions, and relating words to children's experience (**Table 3**). The strategies targeted during the implementation varied from teacher to teacher and were selected according to individual performance on the BL.

Data Collection

Prior to intervention, BL data were collected during three book-reading sessions in each classroom, over three successive days. During the BL phase, each teacher was asked to "read the story how she normally would." The pre-KTs were asked to choose the book for the first BL session (BL1). For BL2 and BL3, books were provided by the S-LPs

| Table 2 | |
|---|--|
| Example of a Coaching Cycle Procedure (Cycle 1 for Strategy 1) | |
| Week 1 – Meeting 1 (Time) | Week 2 – Meeting 2 (Time) |
| <p align="center">Sharing information (20 min)</p> <p>The S-LP</p> <ul style="list-style-type: none"> • presents the target strategy to the teacher, • shares information about the use of this specific strategy, • guides the pre-KT through explicit instructions on why and how to use the strategy and its relevance for the children’s language learning, e.g., “Choose the word, stress it, define it (or provide a synonym), put it in a sentence, mime it (if possible),” • provides examples from the book and suggests trials to the teacher, and provides support cards illustrating targeted strategies. <p>At the end, the teacher is asked to formulate the process of performing the strategy.</p> | <p align="center">Sharing information (15 min)</p> <p>The S-LP</p> <ul style="list-style-type: none"> • reminds the teacher about last week’s target strategy, • re-shares information about the use of this specific strategy, • reminds the teacher, through explicit instructions, why and how to use the strategy, and • asks the teacher about examples from the book and suggests some trials. <p>At the end, the teacher is asked to formulate the process of performing the strategy.</p> |
| <p align="center">Modelling (25 min)</p> <p>S-LP models the strategy during a story reading to the whole group.</p> <p>Teacher observes.</p> | <p align="center">Guiding/Scaffolding (25 min)</p> <p>S-LP returns to the classroom to assist the teacher while practicing the strategy with the same book as in Week 1.</p> <p>The S-LP provides the teacher with oral and/or nonverbal prompts (eye contact, gestures, direct examples, etc.) to perform the strategy. They usually agree on the modality of scaffolding the strategy prior to the session.</p> |
| <p align="center">Feedback (15 min)</p> <p>Teacher is invited to reflect on: the teaching strategies, children’s observed outcomes related to the strategies, and vocabulary items selected.</p> <p>S-LP and pre-KT review the strategy using words from the book.</p> <p>S-LP answers all pre-KT’s questions.</p> <p>The teacher is asked to practice the use of the strategy with the same book, or during other activities, for 1 week. S-LP also provides written instructions to perform desired behaviour (cards, texts, messages).</p> | <p align="center">Feedback (20 min)</p> <p>The teacher is invited to analyze her performance, to identify difficulties, and to reflect on children’s outcomes related to the strategy.</p> <p>S-LP answers all pre-KT’s questions.</p> <p>The teacher is then asked to practice the use of the strategy during other activities.</p> |

Note. S-LP = speech-language pathologist; pre-KT = preschool teacher.

Table 3
Description of Targeted Vocabulary Strategies

| Strategy | Description (The teacher ...) | Example |
|-----------------------|--|---|
| Define a word | Selects a word and provides a definition or synonym. | T: This is a ladybug. A ladybug is a small red or yellow beetle with black spots. |
| Repeating the word | Repeats a targeted word to emphasize it. | T: Aldo is a crocodile. ... A crocodile. |
| Chiming | Asks children to repeat a word together. | T: All together, "Crocodile." |
| Completion prompts | Asks the children to fill in a word in a sentence. | T: Janice went up the ... Ch: [hill] |
| Literal questions | Asks questions to elicit a predetermined word. | T: Where is she hiding? Ch: In the [closet]. |
| Inferential questions | Prompts the child to use preselected words that were not explicitly present in the text. | T: How do you think he is feeling? Ch: [upset]. |
| Relating | Relates a targeted word to the children's experience or real world. | T: It's Teddy Bear's [cake]. Ines, what did you put on your birthday [cake]? |

Note. T = teacher; Ch = child.

who made sure that they were not familiar to the teachers. We sought to determine the variety of strategies in the pre-KTs' respective repertoires and to identify whether their use was facilitated by the teacher's familiarity with the book. All BL sessions were video recorded. Because reading activities were based on the teachers' normal practices, the length of BL observations varied depending on how they usually approached this activity. Strategy occurrences were then recorded in order to calculate the average use for each strategy per book. The pre-KTs were eligible to start the intervention when they exhibited a stable baseline on the majority of targeted strategies (Kratochwill et al., 2010).

The pre-KTs' performance for each strategy was assessed at the end of one cycle through a video-recorded book-reading activity. For each measure, the teachers were supposed to read a story as they had previously done with the respective S-LPs. Strategies that were employed during the session were coded in a coding form developed for the purpose of collecting data on the teachers' use of interactive language to promote vocabulary development. It included three broad categories of utterances, that is, "a word or stream of words that conveys a single unit of thought" (Gerde & Powell, 2009, p. 219): (a) vocabulary-promoting interactive strategies including all targeted strategies (see **Table 3**), (b) responsive language strategies (including referential and inferential comments, responses to child language, and praise), and (c) behaviour-focused utterances (verbal or nonverbal redirections to a child's behaviour such as "shush," "please sit," or "stop it"). Each teachers' utterance was coded to fit in one strategy within a category. Some statements were coded as two utterances, because they contained two strategies, for example,

defining a word and relating it to children's experiences: "A hamster is a very small animal with a round body, short tail, and large pouches in its cheeks. Remember Georgio brought his hamster to school yesterday, what did we give him to eat?" A cutoff score of nine occurrences was used to determine whether a strategy was effectively employed by the participant, in reference to the minimum level of exposure to a word leading to vocabulary acquisition as identified by Storkel et al. (2019) in children with developmental language disorder. For each sequence, the moment a strategy appeared was accurately reported in minutes and seconds. The coding form was developed by the first author and assessed by four experts, who were all experienced S-LPs with an expertise in coaching practices and language development. It was then piloted in two classrooms that were not participating in this study. Based on the results, wording was clarified and various examples were provided in order to make the strategies more easily observable in a specific coding guide.

Two graduate student coders, who were blind to the purpose of the experimental conditions for each pre-KT, independently coded and derived data on the teachers. They used a copy of the books employed during BLs and measures for easy identification of the pre-KTs' contributions beyond the text. Subsequently, three reliability checkers conducted observations on 20% of the selected sessions. Reliability was calculated for each strategy with at least 80% agreement prior to the study, meaning that observers had to agree on the effective use of the strategy to be able to code it as an agreement. Discrepancies were solved by consensus until obtaining 100% agreement.

The pre-KTs' satisfaction was assessed using a rating scale based on the satisfaction rating for mothers by Tsybina and Eriks-Brophy (2010). It consisted of seven statements where teachers estimated if they enjoyed the PD program, if it helped them improve children's language skills, if the strategies were easy to learn, and if they would use them in other book-reading activities or would apply them in any other classroom activity. Items were rated on a 4-point Likert scale, ranging from 1, *strongly disagree*, to 4, *strongly agree* (they were also free to leave comments in open boxes).

Data Analysis

We examined whether our intervention had an effect on the pre-KTs' use of vocabulary strategies in the language of instruction (French in this case). Based on single-case design standards (Kratochwill et al., 2010), we examined the level (average of occurrences among data points) and variability (upper and lower limit across data points) of the number of strategy occurrences per book within each condition. Immediacy of the effect was determined by a sudden rise of at least three occurrences for a strategy above the observed BL level (a cutoff score chosen according to the definition of immediacy provided by Kratochwill et al., 2010). To compare results across conditions, we calculated the nonoverlap of all pairs statistic (NAP; Parker & Vannest, 2009), consisting of the percentage of nonoverlapping points between the two phases (BLs vs. implementation). It also helped to assess the intervention effect even when the targeted behaviour had

already started to improve before the actual intervention, as was the case for some targeted strategies in our study. NAP was calculated using all the points of measure per participant during implementation. An NAP between 32% and 84% suggests a moderate effect and an NAP equal to or above 85% suggests the implementation had a significant effect (Manolov et al., 2016; Parker & Vannest, 2009).

Results

The results are presented in four sections: pre-KTs' use of vocabulary strategies prior to intervention; pre-KTs' use of targeted strategies; pre-KTs' use of nontargeted strategies; and pre-KTs' overall satisfaction during the implementation phase.

Pre-KTs' Use of Vocabulary Strategies Before Implementation

Table 4 shows pre-KTs' mean scores of vocabulary strategy use as calculated across all three sessions of the BL condition prior to implementation. Pre-KTs exhibited stable data on vocabulary strategies. Stability is defined as limited variability in the number of strategies the pre-KTs used during the reading sessions. Although they read the text from the book without using varied strategies to enrich vocabulary, they all tended to prompt children to retrieve information in the text by asking literal questions. This made their score on literal questions higher than the predetermined cutoff score of nine. Thus, strategies aimed at enriching vocabulary in children such as defining, repeating, etc., were rarely used comparatively to literal questions, which justified the intervention.

Table 4

Score Means and Standard Deviations of Strategy Use (Number of Occurrences Per Book) for Each Pre-KT, Calculated Over Three Baseline Sessions

| Pre-KT | DEF | | REP | | CHI | | CP | | LQ | | IQ | | REL | | Total | |
|--------|------|------|------|------|------|------|------|------|--------------|-------|------|------|------|------|-------|-------|
| | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD |
| P1 | 0.67 | 1.15 | 0.67 | 0.58 | 0.33 | 0.58 | 1.00 | 1.73 | 5.33 | 3.79 | 0.33 | 0.58 | 1.00 | 1.73 | 9.34 | 7.92 |
| P2 | 0.67 | 0.58 | 4.00 | 0.00 | 0.00 | 0.00 | 5.67 | 2.31 | 32.00 | 12.12 | 4.33 | 0.58 | 1.00 | 0.00 | 47.66 | 9.81 |
| P3 | 1.00 | 0.00 | 5.00 | 7.00 | 0.00 | 0.00 | 3.60 | 1.67 | 3.60 | 1.67 | 0.58 | 0.33 | 0.00 | 1.00 | 13.72 | 22.99 |
| P4 | 1.67 | 1.53 | 6.00 | 0.00 | 0.00 | 0.00 | 1.67 | 2.08 | 1.67 | 6.51 | 0.33 | 0.58 | 1.00 | 1.73 | 22.99 | 3.09 |

Note: Means equal to or above the criterion level of 9 occurrences are indicated in bold and underlined. P = participant; pre-KT = preschool teacher; DEF = defining a new word; REP = repeating; CHI = promoting child chiming; CP = completing prompts; LQ = literal questions; IQ = inferential questions; REL = relating words to children's experience.

Based on BL scores, and in consultation with the pre-KTs, we identified the primary strategy to be taught to each participant. For P1 and P2, we started with literal questions then inferential questions that were emerging in the BL without exceeding the criterion level score of nine occurrences. This choice was also driven by the teachers' ease at using this strategy and their desire to better employ it in an effort to enrich vocabulary. For P3 and P4, we started with defining words. This strategy also emerged in the repertoires of P3 and P4. For the following cycles, with our aim of individualizing the training, we sought to select new strategies

based on teachers' preferences. However, P3 expressed her wish to improve on literal questions targeting vocabulary even though she used them more than the expected level of nine occurrences. In fact, she was using this strategy almost exclusively, often without targeting specific word learning as initially intended.

Pre-KTs' Outcomes on Targeted Strategies

Table 5 displays the pre-KTs' BL and intervention frequencies of use of strategies as well as the number of coaching cycles for each one. The number

| TS | BL1 | BL2 | BL3 | I1 | I2 | I3 | I4 | I5 | M(BL) | M(I) | NAP (%) | <i>p</i> |
|-----------|-----|-----|-----|-----------|-----------|-----------|-----------|-----------|-------|-------|---------|----------|
| P1 | | | | | | | | | | | | |
| LQ | 1 | 7 | 8 | 37 | 34 | 15 | 25 | – | 5.33 | 27.75 | 100 | .03* |
| DEF | 0 | 0 | 2 | 2 | 4 | 6 | 13 | – | 0.67 | 6.25 | 95 | .05* |
| P2 | | | | | | | | | | | | |
| IQ | 4 | 4 | 5 | 37 | 9 | 6 | 3 | 1 | 4.33 | 11.20 | 60 | .65 |
| DEF | 1 | 1 | 0 | 2 | 8 | 12 | 3 | 14 | 0.67 | 7.80 | 100 | .02* |
| REL | 1 | 1 | 1 | 3 | 4 | 8 | 9 | 4 | 1.00 | 5.60 | 100 | .02* |
| CP | 7 | 7 | 3 | 4 | 9 | 2 | 6 | 40 | 5.67 | 12.20 | 53 | .88 |
| P3 | | | | | | | | | | | | |
| DEF | 0 | 1 | 2 | 14 | 1 | 2 | 1 | – | 1.00 | 4.50 | 70 | .37 |
| LQ | 43 | 73 | 67 | 16 | 29 | 19 | 4 | – | 61.00 | 17.00 | 0 | .03* |
| IQ | 0 | 1 | 0 | 1 | 3 | 29 | 0 | – | 0.33 | 8.25 | 79 | .21 |
| REL | 0 | 0 | 0 | 1 | 0 | 0 | 12 | – | 0 | 3.25 | 100 | .17 |
| P4 | | | | | | | | | | | | |
| DEF | 0 | 3 | 2 | 5 | 10 | 2 | 1 | 8 | 1.67 | 5.20 | 76 | .23 |
| LQ | 6 | 19 | 12 | 0 | 8 | 42 | 14 | 6 | 12.33 | 14.00 | 43 | .76 |
| IQ | 0 | 1 | 0 | 0 | 2 | 9 | 10 | 4 | 0.33 | 5.00 | 86 | .10 |
| REL | 3 | 0 | 0 | 2 | 3 | 11 | 2 | 11 | 1.00 | 5.80 | 83 | .13 |

Note: Scores are presented for 3 baseline (BL) sessions, up to 5 implementation (I) sessions, and means for BL and I. For participant (P)1 and P3, testing was interrupted in I4 because of the Covid-19 health measures, so no data was collected for I5. The nonparametric nonoverlap of all pairs (NAP) statistic was calculated using implementation scores (I1 to I4 or I5) and the associated *p* value. Measures of targeted strategies (TSs) are indicated in bold. DEF = defining a new word; CP = completing prompts; LQ = literal questions; IQ = inferential questions; REL = relating words to children's experience; pre-KT = preschool teacher.
**p* ≤ .05

of cycles per strategy varied from one teacher to another because not everyone took the same time to effectively use the strategy. P1 needed two cycles for both literal questions and word definitions. Even though she exhibited data on literal questions higher than the cutoff score after the first cycle, she expressed her need to have another cycle targeting this specific strategy. P2 and P4 both needed two cycles for defining new words because they did not reach the cutoff score after the first coaching cycle.

Data displayed in **Table 5** suggest that the four pre-KTs showed a sudden rise in targeted strategies immediately after the specific teaching cycle. However, their number considerably decreased when a new strategy was introduced. The observed changes in strategy use were significant for two of two strategies for P1, two of four for P2, one of four for P3, and no statistically significant effect for P4. However, for the latter, the strategy of relating words to children's experiences had an NAP of 83% and inferential questions an NAP of 86%, suggesting a moderate to significant effect of intervention.

Pre-KTs' Use of Nontargeted Strategies

We analyzed the pre-KTs' use of strategies that were not addressed directly in the program to assess the specificity of the implementation (**Table 6**).

Interestingly, as shown in **Table 6**, upon implementation, the number of occurrences of nontargeted strategies did not exhibit a significant increase except for P1, who demonstrated a rise in the use of inferential questions (NAP = 95%, $p = .05$) and word repetition (NAP = 100%, $p = .03$). Overall, nonsignificant changes in the frequency of most strategies suggest that the effect of the implementation did not extend to all nontargeted strategies.

Pre-KTs' Satisfaction

The pre-KTs' evaluations and comments showed their overall satisfaction with the implementation, despite it being cut short by the Covid-19 lockdown. Mean and median ratings of responses to items on the satisfaction questionnaire were calculated. Results displayed in **Table 7** indicated that they were satisfied overall. The training facilitated their learning of new strategies (Items 4 and 5 rated 3.75/4), which they would be able to incorporate in book-reading activities (Item 6 rated 3.75/4). In the teachers' opinions, the intervention also positively impacted children's engagement as well as their language abilities (Items 2 and 3 rated 4 and 3.25/4 respectively). They may also "continue using these strategies during other classroom activities" (Item 7 rated 3/4).

Discussion

This pilot study sought to show if a contextualized PD program provided by S-LPs could help improve pre-KTs' use of taught strategies to promote vocabulary learning in French DLLs. Implementation was based on four teaching functions: sharing information, modelling, guiding/prompting, and feedback (Biel et al., 2020). Findings led to three major results. First, they revealed pre-KTs' need for training with the aim of improving vocabulary development strategies: BL observations showed limited variability in the use of strategies. Aside from literal questions, other strategies did not achieve the predetermined cutoff score of nine occurrences. Second, the individualized and structured implementation process targeting one strategy at a time led to a significant increase in the use of this specific strategy. Finally, the effect of the implementation did not significantly extend to all nontargeted strategies. The increase in use of strategies was therefore likely the result of the S-LPs' specific coaching process. Although the program was conducted in Lebanese preschools, its underlying principles may be transferable to other contexts.

The pre-KTs used a limited variability of strategies during the BL observations compared with the outcomes during the implementation phase. This finding was also highlighted in previous studies (Hsieh et al., 2009). Moreover, the pre-KTs did not scaffold the vocabulary of the children by engaging them in learning complex words. Thus, it is possible that there was a mismatch in perception rooted in the pre-KTs' pedagogical expectations regarding book-reading language goals. It is often considered as an instructional activity in preschools to enhance school readiness in children. Hence, pre-KTs may find it difficult to prioritize complex vocabulary learning through interactive practices with DLL children during an activity they consider as mainly instructional. Thus, tailored, individualized and contextualized PD programs to support language practices in pre-KTs is particularly needed in the Lebanese multilingual context. Although PD programs have already been developed by preschools and the ministry of education, further adaptation efforts should be made in order to meet pre-KTs' needs in their real-world contexts (Markussen-Brown et al., 2017).

Following our implementation program, three of our four participants significantly increased use of several taught interactive language strategies to promote vocabulary learning, albeit in a heterogeneous way. Thus, short, contextualized, and specific training could help increase teachers' use of target vocabulary techniques, as

Table 6**Pre-KTs' Scores on Nontargeted Strategies During Baseline and Intervention Conditions**

| NTS | BL1 | BL2 | BL3 | I1 | I2 | I3 | I4 | I5 | M(BL) | M(I) | NAP (%) | p |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------|-------|---------|------|
| P1 | | | | | | | | | | | | |
| IQ | 0 | 1 | 0 | 1 | 6 | 3 | 7 | – | 0.33 | 4.25 | 95 | .05* |
| REL | 0 | 0 | 3 | 0 | 1 | 0 | 2 | – | 1.00 | 0.75 | 50 | 1.00 |
| CP | 0 | 0 | 3 | 2 | 3 | 0 | 4 | – | 1.00 | 2.25 | 61 | .66 |
| REP | 0 | 1 | 1 | 5 | 12 | 2 | 4 | – | 0.67 | 5.75 | 100 | .03* |
| CHI | 0 | 0 | 1 | 0 | 0 | 0 | 0 | – | 0.33 | 0.00 | 33 | .47 |
| P2 | | | | | | | | | | | | |
| LQ | 25 | 25 | 46 | 32 | 13 | 7 | 25 | 9 | 32.00 | 17.20 | 20 | .17 |
| REP | 4 | 4 | 4 | 25 | 2 | 3 | 1 | 12 | 4.00 | 8.60 | 40 | .65 |
| CHI | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0.00 | 0.60 | 70 | .37 |
| P3 | | | | | | | | | | | | |
| CP | 1 | 1 | 1 | 5 | 2 | 0 | 0 | – | 2.67 | 1.00 | 33 | .47 |
| REP | 4 | 4 | 4 | 25 | 2 | 3 | 1 | – | 5.00 | 9.00 | 79 | .21 |
| CHI | 0 | 0 | 0 | 2 | 1 | 0 | 0 | – | 0.00 | 0.00 | 50 | 1.00 |
| P4 | | | | | | | | | | | | |
| CP | 4 | 1 | 0 | 0 | 6 | 15 | 11 | 3 | 1.67 | 7.00 | 76 | .23 |
| REP | 6 | 6 | 6 | 1 | 18 | 2 | 3 | 35 | 6.00 | 11.80 | 40 | .65 |
| CHI | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.00 | 0.20 | 60 | .65 |

Note: Number of occurrences are presented for 3 baseline (BL) sessions, up to 5 implementation (I) sessions, and means for BL and I. Scores equal to or over the cutoff of 9 occurrences are indicated in bold. For participant (P1) and P3, testing was interrupted in I4 because of the Covid-19 health measures, so no data was collected for I5. The nonparametric nonoverlap of all pairs (NAP) statistic was calculated using implementation scores (I1 to I4 or I5) and the associated *p* value. REP = repeating; CHI = promoting child chiming; CP = completing prompts; LQ = literal questions; IQ = inferential questions; REL = relating words to children's experience; pre-KT = preschool teacher; NTS = nontargeted strategies.

**p* ≤ .05

also highlighted in other studies (Justice et al., 2018). However, participants did require differing amounts of coaching to learn these vocabulary techniques.

Although the pre-KTs' results showed that they had mastered the targeted strategies that were taught, differences appeared in the number of cycles teachers needed for the effective use of a strategy. For example, P1 needed two

cycles to be comfortable with literal questions and definitions, but P3 effectively employed each target strategy after each cycle. Both P2 and P4 also needed two cycles for defining words, but not for the rest of their targeted strategies. Given these differences, it is therefore necessary to consider individual patterns, such as professional experience, initial training, linguistic beliefs (Hsieh et al., 2009), and L2 proficiency (Richards et al., 2013), as well as the nature and complexity of

Table 7**Satisfaction Questionnaire Results**

| Item | P1 | P2 | P3 | P4 | Median |
|---|----|----|----|----|--------|
| I enjoyed this program. | 4 | 4 | 4 | 4 | 4.0 |
| Children in my classroom enjoyed this program. | 4 | 4 | 4 | 4 | 4.0 |
| The program helped to improve children's language. | 3 | 4 | 2 | 4 | 3.5 |
| It was easy to learn new strategies. | 3 | 4 | 4 | 4 | 4.0 |
| I learned something new from this program. | 4 | 4 | 3 | 4 | 4.0 |
| I feel I can apply the strategies in book-reading activities in the future. | 3 | 4 | 4 | 4 | 4.0 |
| I will continue using these strategies during other classroom activities. | 3 | 3 | 3 | 3 | 3.0 |

Note: Participants (P1–P4) ranked statements on a Likert scale from 1 = *strongly disagree* to 4 = *strongly agree*.

the strategy, when reflecting upon teaching it to pre-KTs. First, professional experience is worth considering when reflecting upon individual performance and the nature and the dosage of support provided to professionals (Hsieh et al., 2009). P2 and P3 were more experienced teachers and had more language strategies in their repertoires prior to the intervention. However, some relevant strategies were not used at all. Thus, the training was helpful to improve their use of defining words, inferential questions, and relating words to children's experiences, in light of the importance of those strategies for DLLs. Improvement in P2's and P3's use of language strategies suggests that a behaviour may be modified, even among more experienced professionals. Bearing in mind the shortcomings in teachers' professional preparation and initial training in language development and language support practices in Lebanon (Sreih & Azar, 2020), providing them with contextualized and targeted language training will hopefully meet their needs and expectations. Poor teacher preparation is also reported in international literature, such as in Burchinal (2018).

Moreover, it is worth noting individual differences in strategy learning. It seems that acquiring a strategy is not related to its specific nature, but to individual differences in pre-KTs. Although P1 and P2 significantly increased their use of defining words, this was not the case for P3 and P4. Also, the frequency of literal questions was significantly higher for P1 but not for P4. To better analyze individual differences, it is worth mentioning the pre-KTs' individual dosage with regard to acquiring certain strategies. For example, on several occasions, P1, P2, and P4 missed opportunities to define and explain complex words. They may have found it hard to quickly and clearly define words for various reasons. First, the strategy required language skills that the teacher did not necessarily have, as was the case for P2. During the feedback session, she expressed her struggle to spontaneously

find appropriate definitions and synonyms for some words in French. Learning to use a language technique also depends on the language proficiency of the teacher (Richards et al., 2013). This raises questions about pre-KTs' own language skills in L2 while providing instruction to DLLs (Langeloo et al., 2019). Second, when definitions are used spontaneously, pre-KTs may have trouble formulating an accurate definition, especially for abstract terms (Dickinson et al., 2019). Third, it is also possible that defining words is a strategy that may not correspond to pre-KTs' beliefs about complex vocabulary learning in young DLLs. Therefore, P1 and P4, who were both native French speakers, found it hard to adjust to L2 children. Extending vocabulary beyond simple words has been more frequently observed among monolinguals than bilinguals (Mesa & Restrepo, 2019).

Concerning the specificity of the implementation, the findings suggested that it had no significant effect on the strategies that were not directly taught within the process (Mesa & Restrepo, 2019, for parents, and Milburn et al., 2014, for educators), except for the strategies of repeating words and asking inferential questions for P1. This may be explained by the fact that P1 had a nearly flat BL. Over the course of the training, her language behaviour became more natural, allowing her to vary her occurrences by using more questions and alternative strategies such as repeating the targeted word in order to emphasize it (Hsieh et al., 2009). However, the observed increase in the frequency of use of repeating words for P2, P3, and P4 would suggest levers for the use of some strategies over others: that is, follow-up repetition after defining words. Although these levers differ from one teacher to another, it is important to consider the leverage effect when choosing strategies for individualized PD.

Significant differences between the BL and implementation conditions were not observed for all the

targeted strategies. Moreover, when a specific strategy was addressed, all the pre-KTs exhibited a considerable decrease in the use of the others. This can be explained by the fact that there may only be so many opportunities to use these strategies during book reading, and so, by increasing the use of one strategy, there may be a corresponding decrease in others. An additional explanation may be the amount of cognitive effort required to learn a new practice (Milburn et al., 2015), which leads to a decline in the use of other practices. There are a number of plausible explanations for these findings. First, a process of change in practices may have been engaged through the implementation of each strategy without being reflected significantly in all pre-KTs' results. This might be related to the relatively small numbers of trials and measures, but it might also be explained by the challenges that teachers face to quickly implement specific learning content in their real-life situations (Markussen-Brown et al., 2017). Our participants all stated that this program helped them discover new strategies they were not using before and that they were aware of their importance and their transferability to other activities within the classroom. However, it was not easy for them to adopt them consistently. Sadly, the curtailment of the study did not allow further trials, or a return to BLs in order to better understand our findings. Also, P3 and P4 both reported concerns about children's behavioural excitement if they engaged them in interactive talking, which perhaps hampered their spontaneous use of taught strategies. Thus, understanding pre-KTs' perceptions about their classroom interactions is crucial for designing effective PD programs. In addition, it is also possible that the changes occurred at other levels such as the pre-KTs' use of communication-facilitating behaviours, also known as strong predictors of vocabulary growth (Justice et al., 2018). To this end, it would be interesting to consider the measurement of the use of these behaviours as well as the frequency of responsive statements.

In light of the available knowledge, it is not yet clear how teachers can combine and generalize strategies in order to positively impact vocabulary development in French DLLs. To better understand this issue, it would be useful to consider the initial modalities of the training program in our study. The program was based on an active, reflexive, and collaborative process (Dunst, 2015) in the teachers' own classrooms. This may have facilitated their involvement in their own learning, with direct observable changes in their language practices (Hsieh et al., 2009). In addition, it was known that the systematic combination of various teaching functions was the best way to teach language strategies (Rogers et al., 2020; Schachter et al., 2019), leading to observable increases in pre-KTs' use of vocabulary

strategies. The modalities that were used may have facilitated reflection and active learning through modelling and feedback and encouraged self-learning through live guidance sessions with oral or nonverbal prompting in guided-practice opportunities, resulting in improved use of the vocabulary strategies: Verbal explanations and demonstrations were adapted to pre-KTs' individual background knowledge and language (Biel et al., 2020).

The strength of this program resides in the fact that it is based on a guided practice following a modelling/observation sequence, which led to a real involvement of both the trainer and the teacher and not a simple transmission of knowledge from the S-LP to the pre-KT. [Comment from P4 in the satisfaction rating scale free comment box]

The pre-KTs also appreciated the program's ability to show behavioural modifications and results in situ (Friedman et al., 2012). Additional studies should focus on comparing and adjusting the dosage applied for each coaching modality within each cycle, in order to better understand which component affected the results. Dosage may be considered as one factor responsible for improvement (Landry et al., 2009).

Finally, the implementation model applied in this pilot study provided a practical example of S-LP-pre-KT collaboration. Participants indicated that they were able to reuse the strategies during book-reading activities as they found them easy to learn. This did not require specialized equipment, more time, or specific resources that were not available to teachers. In their satisfaction comments, they all agreed on the important focus that the training put on interactive language practices which led to some observable acquisition of new and complex words in French DLLs. Thus, training teachers may enable them to feel empowered to create a difference within their classrooms, without any further requirements in terms of time or resources.

Limitations

This pilot study should be considered within the context of its limitations. First, our results should be approached with caution regarding their effectiveness overall. The study ended early, owing to the Covid-19 crisis, preventing postimplementation measurements from being performed as well as testing and returning to BLs. This would have helped us better understand how targeted strategies were used after training. Moreover, an NAP with all time points as the same measure (e.g., teaching strategy) was used in the calculation which may have penalized outcomes for strategies introduced later on. Second, our participants

knew about the purpose of the study and also about the strategy that was being observed. It was part of the training. Hence, this study did not address the possibility of S-LPs using the training to help pre-KTs to combine more targeted strategies. Moreover, every participant received the same training so it is not known whether other forms of coaching (e.g., without an S-LP) would have led to the same results. Future studies should examine appropriate dosage and include both planned and unplanned observations and more measures to significantly highlight the gains for each strategy, as well as additional testing (e.g., posttraining and follow-up assessments) with more participants from various school contexts, prior to implementation. It would also be worth considering varying tasks to better identify the constraints related to a specific task (e.g., difficulty of telling a story with too many interruptions). Thus, teachers could use a fixed number of strategies (when adding a new one, they could decrease the use of the old one). This would also help us better understand constraints related to cognitive load. We could solve this issue by adding a joint play activity for follow-up.

Finally, regarding the single-subject design itself, although there are advantages provided by the design, such as assessing the feasibility of an intervention, or refining individual outcomes to overcome interindividual heterogeneity, it also presents limitations regarding results generalization. Moreover, our study, which was interrupted at the end, only allows correlational conclusions and does not allow causal inferences to be obtained. However, replicating several studies with the same design will help increase the level of evidence required for evidence-based practice and will also help address the issues of a small sample size and limited generalization effect (Alnahdi, 2015).

Conclusion

This study illustrates how pre-KTs of DLLs can benefit from a PD design that promotes vocabulary learning, even in the case of L2 instruction. The design allows pre-KTs to focus on a learning trajectory aimed at a particular strategy being taught rather than on a broader range of strategies. The findings have implications for the future implementation of language support programs: An S-LP coaching process which includes sharing information, modelling, guiding, and providing feedback, actively involving teachers in their real-world context, is likely to make a change in their language practices. Hence, the S-LP's role should focus on an individualized instructional approach to PD but also on reflexive practices with pre-KTs. Therefore, future research should tackle S-LPs' preparation to be able to conduct PD programs in optimal conditions.

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Authors' Note

Correspondence concerning this article should be addressed to Edith Kouba, University of Liège, Research Unit for a life-Course perspective on Health & Education, Quartier Village 2 Bât. B38b, 30 rue de l'Aunaie, 4000 Liège, BELGIUM. Email: edith.elkouba@uliege.be