



Making learning visible in kindergarten classrooms: Pedagogical documentation as a formative assessment technique

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ABSTRACT

This study investigated interactions between pedagogical documentation—a formative assessment technique and instructional intervention designed to increase student learning by recording children's experiences—and kindergarten children, families and teachers in the UAE. The study sample comprised six teachers in six kindergarten classrooms, 141 kindergarten children and 67 parents. The major data-gathering techniques were participant observation, semi-structured individual interviews, focus group interviews and parent questionnaire. The results revealed that pedagogical documentation has the potential to improve children's learning, contribute to teachers' awareness of learning processes and help parents gain a better understanding of learning processes in their children's education.

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1. Introduction

The purpose of this study was to investigate the interactions between pedagogical documentation as a formative assessment technique and kindergarten children, their parents and teachers in United Arab Emirates (UAE), an ethnically, linguistically and culturally diverse country in the Middle East. More specifically, the focus of the study was the value of using pedagogical documentation as a formative assessment technique for kindergarten teachers, kindergarten children and their parents. A major motivation of this study was the increasing diversity in early childhood settings. The world is becoming increasingly connected and interdependent and today's early childhood programmes serve children from different ethnic, linguistic and cultural background (Krechevsky & Stork, 2000). National Association for Education of Young Children (NAEYC, 2005) asserts that this increase in diversity among children in early childhood programmes require urgent attention. According to NAEYC, one of the most pressing needs is to improve assessment practices for these diverse groups of young learners. All young children have the right to experience ongoing, effective assessment that supports their learning and development and they have the right to be assessed with high-quality assessments and under assessment conditions responsive to their needs (NAEYC, 2005).

The challenge, however, is the scarcity of appropriate assessments to use with this diverse group of young learners.

The picture of kindergarten settings in UAE is a good representation of this increasing diversity in early childhood settings around the world. UAE is an ethnically, linguistically and culturally diverse country (19% of the population comprises UAE nationals, while the majority of the population are expatriates— about 50% are from South Asia, around 23% are non-Emirati Arabs and Persians and around 8% come from developed countries in Europe, North America, Asia and Oceania) (Central Intelligence Agency, 2010). This diversity is well reflected at every level of schooling in UAE, including kindergartens. Children come to kindergarten programmes with very diverse ethnic, cultural and language backgrounds and international teachers teach in English, which is not the first language of most children. In some cases, English is also not the first language of the teacher. Moreover, children come to class with diverse abilities, interests, learning styles, likes/dislikes and pre-constructed meanings of the world. Parents of these children have their own perspectives on what is best for their children and expectations for the schooling experiences of their children. Teachers need to ensure they meet the needs of each child in their classrooms and that the information they use for decision making is unbiased and culturally sensitive. They undergo numerous interactions with these children to understand the diversity of what and how they learn as well as how they make sense of their world. Meeting this diversity challenge in teaching and learning is a difficult task for kindergarten teachers.

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To meet this challenge, the researcher proposed the use of pedagogical documentation, framed within the pedagogy of the Reggio Emilia approach (Malaguzzi, 1998), as a formative assessment technique—a technique that is used to adapt teaching to meet students' needs (Black & Wiliam, 1998)—in order to understand the meanings of the experiences of three audiences—children, teachers and parents. As noted by Creswell (2007) and Silverman (2005), qualitative research strategies are particularly appropriate to address the meanings and perspectives of participants. In addition, Creswell (2007) suggested the primary method of investigating the meanings of participants' perspectives was grounded theory (Glaser & Strauss, 1967), a qualitative research methodology designed to assist researchers with the systematic collection and analysis of data and the construction of a theoretical model.

1.1. Pedagogical documentation framed within the pedagogy of the Reggio Emilia approach

Although the idea and practice of pedagogical documentation has a long history (Dahlberg, Moss, & Pence, 2006), it was used in this study within framework of the pedagogy of the Reggio Emilia approach. Originating in the town of Reggio Emilia in northern Italy, the Reggio Emilia approach can be described as 'a set of philosophical and pedagogical assumptions, methods of school organization, and principles of environmental design, taken as a unified whole' (Edwards, Gandini, & Forman, 1998, p. 7). Rinaldi (2005) described Reggio Emilia as a 'body of pedagogical thought and practice, permeated by cultural values, making the early childhood centres into social and political spaces' (p. 17). Rinaldi also asserted that Reggio Emilia is a pedagogy that considers the 'child' an active subject with rights, 'knowledge' the construction of meaning, 'learning' the process of construction, based on relationships and listening, that makes learning visible and supported through pedagogical documentation. The educators in Reggio Emilia view the child as *protagonist* (an active constructor of his or her own knowledge), collaborator and communicator; the environment as third teacher; the teacher as researcher, partner, nurturer and guide; the documentation as communication; and, the parent as partner (Caldwell, 1997). They consider documentation a standard part of early childhood teaching practice, with its key function to provide children with a 'concrete and visible memory of what they said and learn in order to serve as a jumping-off point for next steps in learning' (Edwards et al., 1998, p. 10).

Taking this idea further, Caldwell (1997) defined *pedagogical documentation* as a method used to capture children's learning experiences systematically through observations, transcriptions of classroom interactions and analyses of their work products, and then share these with the children through visual representations that provoke reflection. Dahlberg et al. (2006) asserted that, conceptually, pedagogical documentation refers to two related subjects: 'a *process* and an important *content* in that process' (p. 47). According to Dahlberg, Moss and Pence, the *content* is material that records children's interactions, their work, and how the pedagogue relates to the children and their work. This material can take many forms, including, but not limited to, anecdotal records of children's interactions, concrete artefacts in the form of photographs, examples of the children's work at different stages of completion, audio and video recordings, sketches and graphs. The *process* involves the use of content as a means to promote dialogue and to reflect upon the pedagogical work through revisitation, interpretation and negotiation by the protagonists (children, teachers and parents) (Dahlberg et al., 2006; Katz & Chard, 1996; Rinaldi, 2001). This negotiation between process and content distinguishes pedagogical documentation from other forms of early childhood assessment (Katz & Chard, 1996; MacDonald, 2007).

1.2. Pedagogical documentation as a formative assessment technique

Conceptually, *formative assessment* has been defined as 'frequent, interactive assessments of student progress and understanding to identify learning needs and adjust teaching appropriately' (OECD, 2005, p. 21). The Assessment Reform Group (2002) defined formative assessment (i.e., assessment for learning) as the 'process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there'. In this study, the researcher used formative assessment to refer to all activities undertaken by teachers and by children that provide information for use as feedback to modify teaching and learning activities (Black & Wiliam, 1998).

Assessment of young children's development and learning in early childhood settings is relatively informal and seldom conducted in a systematic way, with a focus on evaluating learning as a product, not a process (Krechevsky & Stork, 2000). However, assessment involves more than the products and outcomes of learning; it concerns how children learn and make sense of their world. This study was motivated by an assessment approach that focuses on documenting children's learning processes and products to improve children's learning, inform teachers' curricular and pedagogical decisions and help parents become aware of their children's learning.

The process of pedagogical documentation involves recording children's learning experiences, analysing children's work products, and sharing these with the children through a documentation panel, that is, a visual representation or archive of children's learning that provokes reflection. This process provides a kind of debriefing or revisiting of experiences during which new understandings can be clarified, deepened and strengthened (Caldwell, 1997; Dahlberg et al., 2006). Through revisitations during sharing time, children learn from each other and are stimulated by others' work. Sharing work, ideas and thoughts through a documentation process encourages children to become involved, seeking teachers and peers' approval and advice (Katz & Chard, 1996). Sharing work also promotes children's self-confidence and self-awareness (Edwards & Gandini, 2001). This process of pedagogical documentation provides feedback to teachers to adjust ongoing teaching and learning in order to improve children's achievement of intended instructional outcomes. This is the central idea of formative assessment.

Pedagogical documentation is more than 'child observation' (Dahlberg et al., 2006). The purpose of child observation is to assess children's development and learning in relation to already predetermined performance criteria that define what a typical child should do at a particular age. By contrast, pedagogical documentation mainly tries to determine the child's capabilities without any predetermined framework of developmental norm and what he or she can do with various kinds of environmental support (Dahlberg et al., 2006; Krechevsky & Stork, 2000) within their zone of proximal development (Vygotsky, 1986).

Theoretically, pedagogical documentation reveals what and how children are learning and also helps teachers reflect on their actions (Edwards & Gandini, 2001; Project Zero, Cambridgeport Children's Center, Cambridgeport School, Ezra H. Baker School, & John Simpkins School, 2003), as a vehicle for self-reflection (Dahlberg et al., 2006) and a way for teachers to collaborate with other professionals to share and discuss classroom events and activities. Teachers can collaborate with each other in planning for the documentation process and discuss results to analyse, evaluate and strengthen the quality of their work (Helm, Beneke, & Steinheimer, 1998).

Furthermore, pedagogical documentation may assist teachers in developing partnerships with parents and the community

(Carr, 2001; Katz & Chard, 1996). It is a vital tool for the creation of a reflective and democratic practice that involves children, teachers, parents and other concerned agencies in the community (Dahlberg et al., 2006). In addition, there are four potentially different audiences for documentation: children, teachers, parents and community agencies (Carr, 2001). Publicising the documentation permits teachers, parents and community agencies to recognise children's experiences in the school. Through examining documentation panels, parents can see their children's progress, appreciate their progress and share their home observations with the teacher. Teachers and parents can then develop ideas about how to improve the child's learning (Carr, 2001; Katz & Chard, 1996).

Pedagogical documentation is a powerful assessment technique because it provides information about children's learning and progress that may not be demonstrated by the formal standardised

assessment methods teachers employ (Katz & Chard, 1996; MacDonald, 2007). Due to its potential contribution to children's learning, teachers' teaching and parents' understanding of their children's learning, early education teachers today widely use pedagogical documentation throughout the U.S., Canada and Australia to record understandings about children's thinking and learning (Fleet, Hammersley, Patterson, Schillert, & Stanke, 2001; Goldhaber & Smith, 1997; Grieshaber & Hatch, 2003; Helm & Gronlund, 2000; Kocher, 1999, 2004; Oken-Wright, 2001; Project Zero, Cambridgeport, Cambridgeport, Ezra H. Baker School, & John Simpkins School, 2003; Turner & Krechevsky, 2003). However, even though the theoretical contribution of pedagogical documentation is well documented in the literature, to the researcher's knowledge, only a few empirical analyses (Aghayan et al., 2005; Goldhaber & Smith, 1997; MacDonald, 2007) have been conducted

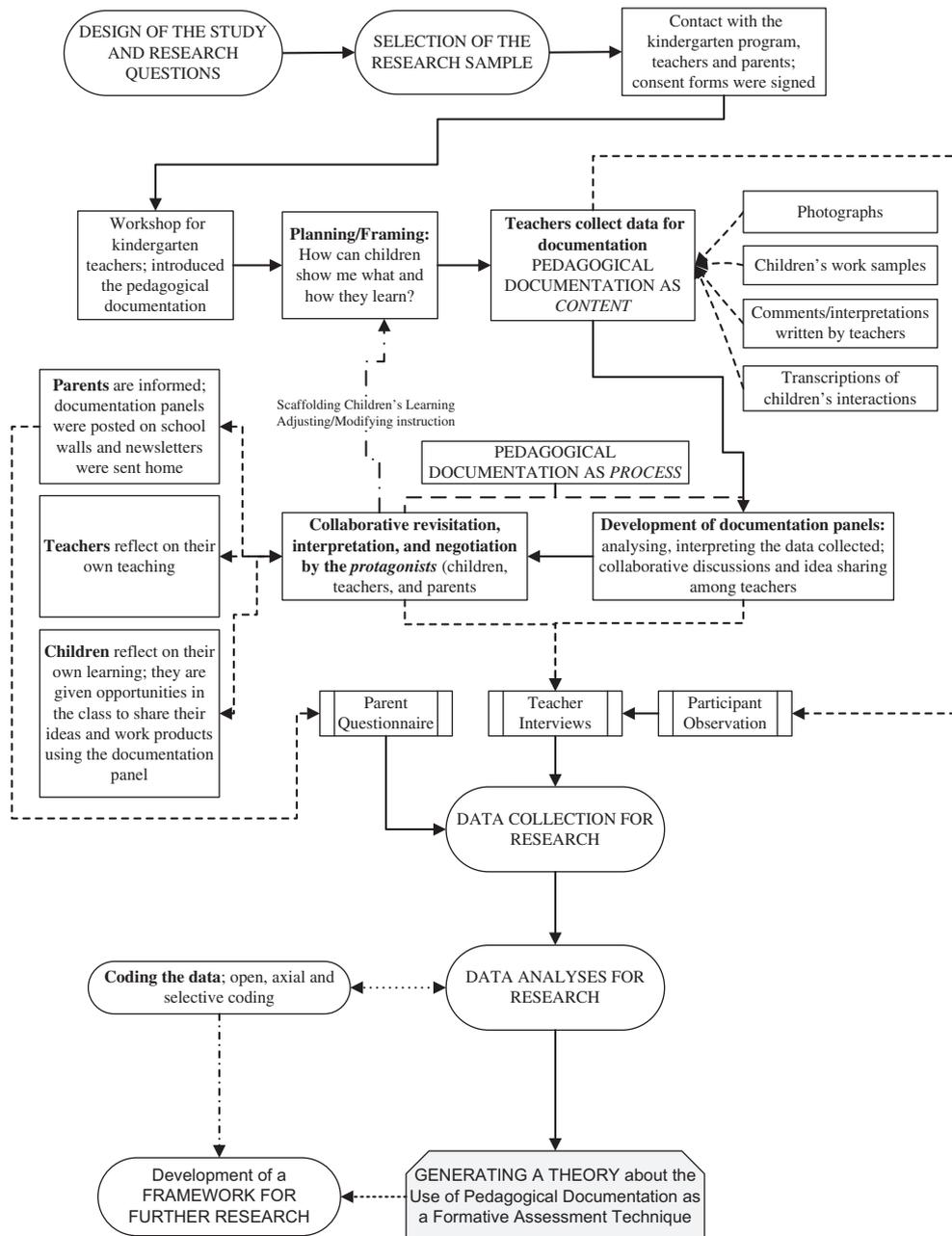


Fig. 1. . Research process and procedures.

on the use of pedagogical documentation in early childhood classrooms. Among these empirical studies only MacDonald (2007) investigated its potential as a means of formative assessment in literacy instruction. Moreover, the theoretical and empirical studies reviewed here emphasised the contribution of pedagogical documentation to the children's learning, teachers' teaching and parents' understanding of children's learning in only Western countries. Would pedagogical documentation have the same contribution with a diverse group of children and teachers in a different context, in a different programme or in a different country? This study investigated the value of pedagogical documentation as a formative assessment technique for kindergarten children, their parents and kindergarten teachers as participants in a 'different cultural and regional context'. Specifically, this study addressed the following three critical questions relating to the theory and practice of pedagogical documentation in kindergarten classrooms in UAE:

- (1) To what degree is pedagogical documentation useful to kindergarten teachers as a method of formative assessment?
- (2) To what degree does pedagogical documentation as a formative assessment method contribute to kindergarten children's learning?
- (3) How does pedagogical documentation help parents of kindergarten children understand their children's learning experiences in kindergarten?

2. Methods

Qualitative research methods were used for this study to uncover meanings of teachers and parents' experiences with the use of pedagogical documentation as a formative assessment method. The methods used involved developing codes, categories and themes inductively rather than imposing predetermined classifications on the data, generating working hypotheses from the data and analysing narratives of participants' experiences (Strauss & Corbin, 1990) with pedagogical documentation process (see Fig. 1 for research process and procedures).

2.1. Sample

A purposive sampling technique was used to limit the influence of variability in programme curricula and teaching practices (Patton, 1990) and optimise the findings. The study took place in an international private school in Al Ain, UAE. The sample for this study comprised six teachers in six kindergarten classrooms, 141 kindergarten children and 67 parents (see Table 1 for a profile of all six kindergarten classrooms). The language of instruction was English in all six kindergarten classrooms. More than 80% of the participating children ($n = 112$) were learning English as a second language. However, the majority of children had experience with learning in English prior to kindergarten (in nursery and preschool programmes).

2.2. Procedures

2.2.1. Entry into the field

The school chosen for this study was referred to the researcher by the Department of Private Schools in the Al Ain Education Zone, which represents the UAE Ministry of Education. The selected school was considered by this office to promote professional development and innovative practice, to have a diverse teacher and student body and a teacher body with no experience in using pedagogical documentation, but that was willing to implement it.

When the school and teachers were contacted, the purpose and scope of the study were reviewed; informed consent was obtained

from all six teachers, with an emphasis on confidentiality; each teacher was asked to choose a pseudonym for the research; and, they were promised the opportunity to review the interview transcriptions. To ensure that participant teachers had no prior experience with pedagogical documentation, a pre-documentation questionnaire was administered to teachers. This questionnaire also sought to collect baseline information about teachers' educational and professional backgrounds as well as their current assessment practices. Teachers reported that they had not used pedagogical documentation before, however had utilised informal observations, oral questioning and worksheets.

In addition, before the study began, the parents of all 141 children were sent an invitation to participate in the study along with an informed consent form. Sixty-seven parents volunteered to participate and gave permission for their children's pictures and work samples to be included on documentation panels. As a result, pictures and work samples of 74 children were excluded from the documentation panels publicised in the school and newsletters sent home. However, none of the children were excluded from the classroom activities and sharing time of the documentation process.

2.2.2. Data collection

The major data-gathering techniques in this study were participant observation, semi-structured individual interviews, focus group interviews and parent questionnaires. The teachers participated as participant observers. They shared their observations of, and experiences with, the documentation process with the researcher through individual and focus group interviews.

The research process began with the introduction of pedagogical documentation to participant teachers via a series of 1-h workshops. The researcher first briefed teachers about the project and then provided training in the documentation process. Teachers also learned how to select items for the documentation panels through lectures, expert ideas/articles and samples of documentation panels.

In the following 16 weeks, the researcher collaborated with the teachers on the development of the documentation panels and interpretations of the items that would be posted on the panels. The

Table 1

A profile of six kindergarten classrooms.

	Class A	Class B	Class C	Class D	Class E	Class F
Teachers' Pseudonym	Sabrina	Ally	Jamilah	Yasmine	Keri	Linda
Teacher Profile						
Degree	BA	BA	BS	BS	BA	BA
Major	English	English	Science	English	Art	Spanish
Teaching Certificate	Kg	Kg	Kg	Kg	Kg	Kg
Kg Teaching Experience	9 yrs	7 yrs	4 yrs	2 yrs	3 yrs	6 yrs
Ethnicity	South Africa	South Africa	Lebanon	Iraq	Kyrgyzstan	Cuba
Child Profile						
Number of Children	26	25	24	23	19	24
Ethnicity						
Emirati	18	17	17	15	13	16
Expatriate	8	8	7	8	6	8
Gender						
Girl	15	13	12	13	10	14
Boy	11	12	12	10	9	10

BA: Bachelor of Arts.

BS: Bachelor of Science.

Kg: Kindergarten.

researcher and the teachers exchanged ideas about how they could prepare panels that would fit their students' needs, abilities and learning styles. The documentation panels included a title, classroom artefacts or documents teachers had collected (e.g., transcripts of children's conversations, photographs of children's work and play activities, children's work samples, etc.) and the teacher's analysis or interpretation of what and how children learned.

When the panels had been developed, teachers first shared them with the children during whole-class group time, which usually took place on the last day of every second two-week period. The researcher participated in several of these periods to provide

teachers with feedback. The panels were posted on the classroom walls for a week and then displayed in the school corridors so parents could view them. For parents who were unable to come to school to pick up their children, a biweekly newsletter that included all six documentation panels and notes about the panels was sent home with every child who participated in the study. The newsletters were bilingual—English and Arabic—so all parents could understand what was happening in their children's classrooms.

Informal individual and group interviews conducted with the teachers during the study period provided the researcher with data on the documentation process—confirmatory information

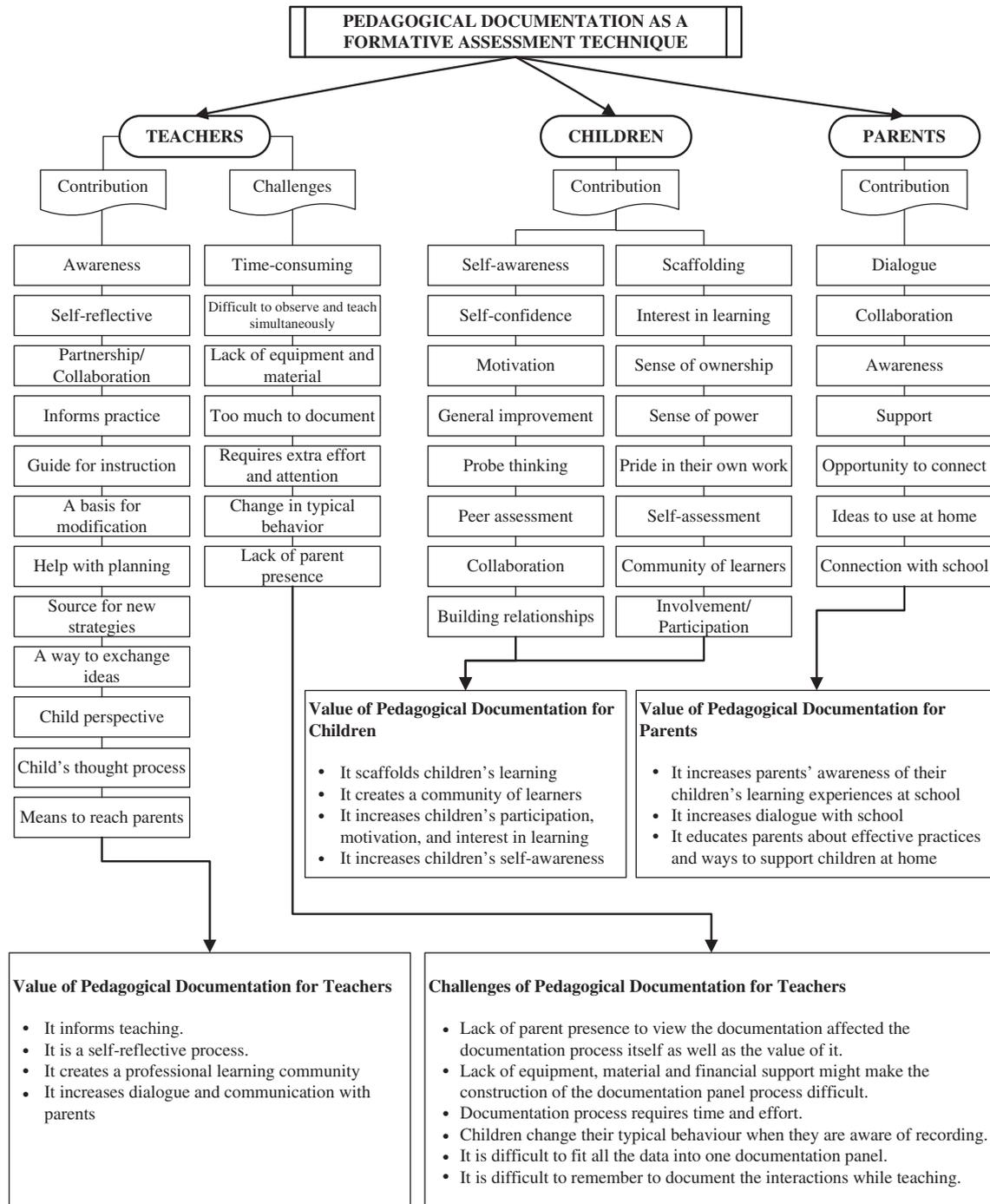


Fig. 2. The grounded theory model for use of pedagogical documentation.

regarding the development of documentation panels, correct use of documentation and challenges faced by the teachers. Post-documentation individual semi-structured interview sessions and a focus group interview session also took place with participating teachers at the conclusion of the project to discuss the effectiveness of pedagogical documentation as a formative assessment technique. A digital audio voice recorder was used to record (and subsequently transcribe) all of the interviews.

During the post-documentation *individual interview sessions*, teachers were asked specific questions about their classrooms, including (1) their use of the documentation panels with the children throughout the study; (2) any observations of improvement in children's learning; (3) the children's interest, motivation and engagement during the documentation process; and (4) any challenges, specific to their class, faced during the documentation process.

During the post-documentation *focus group interviews*, teachers were asked about their opinion on the following factors: (1) the contribution of pedagogical documentation to their thought processes regarding the assessment of young children's learning; (2) the degree to which the documentation process was useful as a method of formative assessment; (3) how it affected their planning of classroom activities; (4) how it contributed to children's learning in general; (5) how it contributed to their awareness of children's learning in general; (6) whether they felt it was useful in communicating the children's learning to parents; and, (7) whether there were barriers and challenges involved in using the documentation.

Furthermore, prior to the documentation process, parents were asked via an open-ended questionnaire to report on their children's characteristics and what they would like to know about their children's school experiences. The purpose of this was to enhance the effectiveness of the documentation process. Analysis of the pre-documentation data revealed that, in general, parents were interested in learning more about the current status and progress of their children's development and learning as well as their children's experiences in school. Considering all the data collected, teachers used a range of teaching styles to cater to different learning styles, likes, dislikes and interests when initiating activities during the documentation process.

At the conclusion of the study, parents were sent another open-ended questionnaire and asked to share their thoughts regarding (1) the degree to which the documentation panels had contributed to their understanding of how and what their children were learning at school and (2) whether the panels had helped them talk with their children and the teachers about their children's learning. The pre- and post-documentation questionnaires were available in both Arabic and English. Local parents received the Arabic version and those from abroad, the English version.

2.2.3. Data analysis

A major concern for rigor in qualitative research is evidentiary adequacy (i.e., time in the field and extensiveness of evidence used as study data) (Creswell, 2007). The data for this study consisted of over 20 h of digital audio recordings that documented more than 14 h of individual interviews and 6 h of focus group sessions with the participant teachers over a period of 18 weeks. All of the audio recordings were transcribed by a research assistant. The data also included a parent questionnaire data. The data corpus consisted of around 300 pages of transcriptions and 89 pages of questionnaire analysis.

The analyses of the study data were founded on an inductive approach, which is based on the constant comparative method of data analysis (Strauss & Corbin, 1990). This inductive process involved the researcher working back and forth between the themes and database until an inclusive set of major themes was established (Creswell, 2007; Patton, 1990). Analyses of the study data consisted of

three phases of coding—open, axial and selective (Strauss & Corbin, 1990). Open coding involved taking data (interview transcriptions and questionnaire responses) and segmenting them into categories of information. This was followed by axial coding, in which connections were made among categories. The final phase was selective coding, in which the researcher related the central phenomena to other categories, validated the relationships and filled in categories that needed further development (Strauss & Corbin, 1990).

To increase the credibility and validity of the results (Silverman, 2005), themes that emerged from the data were later verified by the participants to allow them to shape the themes emerging from the process. The researcher also asked one of his colleagues with expertise in the research topic and a background in early childhood teacher education to comment on the study design, research questions, documentation process, and study results as they emerged.

3. Findings

The grounded theory model for the use of pedagogical documentation as a formative assessment technique, derived from Strauss and Corbin's (1990) framework and developed from the present investigation, is shown in Fig. 2.

3.1. Value of pedagogical documentation as a formative assessment method for teachers

In answer to the question, 'To what degree is pedagogical documentation useful to kindergarten teachers as a method of formative assessment?', six participant teachers were interviewed individually and in focus group sessions during and at the conclusion of the project. Four major themes emerged from analysis of teachers' perspectives on the value of pedagogical documentation for teachers (see Table 2 for a matrix and total frequency of theme categories): (a) It is informative for instructional purposes; (b) It is self-reflective; (c) It creates a professional learning community; and (d) It increases dialogue and communication with parents.

All six teachers noted that, in general, pedagogical documentation was very *informative*. They also asserted that pedagogical documentation process informed them about what and how the children learn, what children's understandings are and what misconceptions children develop. They felt that this type of assessment was part of the instructional process. One teacher noted that, 'By asking a child questions about his drawing, I could understand what the picture represents in his mind—something that I would not see by just looking at his drawing' (ALLY23-10-08, p. 3). Moreover, one teacher stated that it provided insight into children's thought processes. Another noted it helped with understanding the perspectives of children themselves.

Table 2

Value of pedagogical documentation for teachers: a matrix of theme categories.

Theme category	Teachers						Total frequency
	S	A	J	Y	K	L	
It informs teaching	+	+	+	+	+	+	6
It is a self-reflective process	+	+	+	+	+	+	6
It creates a professional learning community	+	0	+	0	0	+	3
It increases dialogue and communication with parents	+	+	+	+	0	0	4

Key: + = Perceived as a value of pedagogical documentation for teachers; 0 = not mentioned as a value of pedagogical documentation for teachers.

Teacher pseudonyms: S = Sabrina, A = Ally, J = Jamilah, Y = Yasmine, K = Keri, L = Linda.

Subsequently, all six participant teachers reported pedagogical documentation data provided them with information on whether adjustments were needed in their teaching or in the children's learning. It helped them decide where the learning experiences should go next, what extra learning experiences were needed by children and what materials were necessary for these experiences. In other words, they reported that the process of pedagogical documentation was *self-reflective*; it made them aware of their own teaching. Teachers noted that, through examination of children's work products and listening to their conversations in class and during revisitation time of the documentation process, and through the feedback they received from their colleagues, they were able to reflect on how they can improve children's learning, how their teaching can be strengthened, improved or modified. Teachers felt this process enabled them to be more productive and effective. One teacher indicated the following:

This process helped me to develop my teaching abilities, was intellectually stimulating, engaging, and helped me more closely connect to my colleagues professionally, and to parents/families. It also helped me to build on my lesson planning and my relationship with the children in my classroom. (SABRINA11-12-2008, p. 9)

This comment also points to another crucial contribution of pedagogical documentation for teachers, namely, that it *creates a professional learning community*. Three participant teachers indicated that, through collaborative meetings with their colleagues, they were able to give and receive informative feedback on their teaching and assessment of children's learning. One teacher made the following comment:

The documentation process, especially the meetings with my colleagues at the same school, helped me to analyse my own work and to get feedback from others regarding my practice. They became a third eye for my own practice by providing constructive feedback and suggestions. (JAMILAH07-12-08, p. 7)

Another teacher stated, 'We learned from each other during the process. While working on the design and content of the documentation panels, we discussed about how to best convey the classroom interaction in the panels'. (LINDA13-11-08, p. 4).

Another major theme that emerged from teachers' perspectives of the value of pedagogical documentation for teachers was that it increased the *dialogue and communication with parents*. Four participant teachers felt that, when it was carefully designed, the pedagogical documentation system assisted them in informing and educating parents about their teaching practices and children's learning experiences. In the words of one teacher, 'It was rewarding to hear parents' comments about what we do in the classroom when they see the documentation panels, even though half of my parents did not involve [*sic*] in the process' (JAMILAH07-12-08, p. 8). Another teacher said,

When I first heard that we would include parents in the documentation process, I did not find it realistic ... But, later, I realised that the parents who saw the panels were attracted by the appeal of the documentation panels, they were happy to see their children's photographs included in the panel. They looked at their children's work samples and asked me questions about them. This interest in documentation made me happy, as these parents started caring more of [*sic*] what I do in the class. (YASMINE04-12-08, p. 5)

This quotation and those noted earlier indicate that pedagogical documentation increased the teachers' dialogue with parents. Through this process, parents became more involved as their awareness of teachers' classroom practices grew.

Analysis of the teacher interviews also revealed that, while teachers found the pedagogical documentation very useful, and they were very motivated to try this innovative practice in their own classrooms, they also reported that they encountered difficulties and faced *challenges* during the documentation process. Six major theme categories emerged from the analysis of self-reported challenges faced by teachers in the development and use of pedagogical documentation (see Table 3 for a matrix and total frequency of theme categories). These theme categories include: (a) Lack of parent presence to view the documentation affected the documentation process itself as well as the value of it; (b) Lack of equipment, material and financial support might make the construction of the documentation panel process difficult; (c) Documentation process requires time and effort; (d) Children change their typical behaviour when they are aware of recording; (e) It is difficult to fit all the data into one documentation panel; and (f) It is difficult to remember to document the interactions while teaching.

All six teachers cited the lack of parent presence for viewing the panels. They stated that children often went home by bus or were picked up by their nannies; thus, most parents did not have the opportunity to see the panels on the school walls. This made communication with parents about the panels difficult and required a shift in the format of the documentation. Thus, they faced the challenge of preparing newsletters that summarised the documentation panels.

All six participant teachers agreed that, if they continue to use documentation in their teaching, they would face a lack of equipment, material and financial support which will make the construction of the documentation panel process difficult. Three teachers suggested that the school might not provide all the materials if they continued to use this method. In the words of one teacher, 'We were lucky in this research process, as you provided us with the necessary materials and equipment. I don't think the school provides us with these tools if we continue to use pedagogical documentation' (SABRINA11-12-2008, p. 9).

Three teachers mentioned that the pedagogical documentation process requires time and effort. Two of these teachers stated that,

Table 3
Challenges of pedagogical documentation for teachers: a matrix of theme categories.

Theme category	Teachers						Total frequency
	S	A	J	Y	K	L	
Lack of parent presence to view the documentation affected the documentation process itself as well as the value of it	+	+	+	+	+	+	6
Lack of equipment, material and financial support might make the construction of the documentation panel process difficult	+	+	+	+	+	+	6
Documentation process requires time and effort	0	+	0	+	+	0	3
Children change their typical behaviour when they are aware of recording	+	0	0	0	0	+	2
It is difficult to fit all the data into one documentation panel	0	0	+	+	0	0	2
It is difficult to remember to document the interactions while teaching	0	0	+	0	+	0	2

Key: + = perceived as a challenge of pedagogical documentation for teachers; 0 = not mentioned as a challenge of pedagogical documentation for teachers. Teacher pseudonyms: S = Sabrina, A = Ally, J = Jamilah, Y = Yasmine, K = Keri, L = Linda.

even though the wealth of data collected for documentation provided them with rich assessment information, they found the whole process effort-demanding and time-consuming. One stated that,

I had to pay extra attention not to miss important conversations among children, spent extra time to organise children's work samples and select the most representative ones to include on the panel. ... And, it was sometimes overwhelming to analyse all the data we collected. (KERIO4-12-08, p. 6)

Another teacher noted that, 'Because of the number of interactions in the class, there was too much to document. It requires extra effort to capture all these interactions' (ALLY07-12-08, p. 6).

Moreover, two participant teachers affirmed there were numerous interactions in the classrooms; consequently, the amount of data collected from these interactions made it difficult for teachers to fit all the data into one documentation panel. Both teachers cited the difficulty in making decisions to select content for the panels. Two other teachers pointed out the challenge of remembering to document the interactions while teaching continued. One teacher found this very difficult at the beginning of the research process, as she was not used to recording children's learning experiences while she was teaching.

A final challenge cited by two teachers was the change in children's typical behaviour while teachers were capturing children's learning experiences. One teacher said, 'Change in children's typical behaviour diminishes the authentication of the documentation process; thus, when using digital cameras, it is difficult to capture the authentic moments of children's interactions' (LINDA17-10-08, p. 2).

3.2. Value of pedagogical documentation as a formative assessment method for children

To answer the question, 'To what degree does pedagogical documentation as a formative assessment method contribute to children's learning?', all six participant teachers were asked about their observations of children's learning during the documentation process, children's interest, motivation and engagement during the documentation process, and their opinions on the value of pedagogical documentation as a method of formative assessment for children's learning in general. Four major themes emerged from the analysis of teachers' perspectives on the value of pedagogical documentation for children (see Table 4 for a matrix and total frequency of theme categories): (a) It scaffolds children's learning; (b) It creates a community of learners; (c) It increases children's participation, motivation and interest in learning; and (d) It increases children's self-awareness.

Analysis of individual and focus group interviews with the teachers indicated that all six teachers felt there was general improvement in the children's learning. In general, teachers reported that, through their extra efforts to document children's interactions, they were able to capture the critical moments in which

children appeared ready to take a step forward toward learning. Teachers indicated that documentation helped them gain an in-depth understanding of children's knowledge and skills, which then helped them probe children's thinking and provide experiences that would *scaffold children's learning*. Teachers reported that the use of pedagogical documentation enabled them to make more informed decisions about whether to introduce new content, knowledge or skills with supplementary activities and experiences, which then supported children's learning even further.

Four teachers indicated that documentation increased children's *participation, motivation and interest in learning*, noting it provided opportunities for children to revisit, self-correct and reflect upon their own learning. During the revisitation times in particular, it invited discussion, self-evaluation and peer assessment. One teacher commented,

I witnessed that documentation increased the amount of communication, negotiation and relations which I had less of prior to the introduction of documentation in my class. As I see children trying to give feedback to others, in simple forms, I encourage others to exchange ideas as well. (SABRINA04-12-08, p. 3)

Another teacher emphasised the contribution of pedagogical documentation to the motivation and participation of children in learning, stating,

... Especially, the feeling of the ownership of their own work increased children's motivation to learn. ... Children wanted to contribute to the sharing time with their ideas and thoughts as I provided feedback to them. After observing their friends talking about their work products, children who kept quiet also wanted to do something in the class and have their work products posted on the panels and be shared with the whole class. (ALLY14-12-2008, p. 11).

Four participant teachers indicated a crucial contribution of pedagogical documentation, asserting it created a *community of learners* in which children learn from each other. They noted that revisitation times of the documentation process along with the spirit of collaboration created by the documentation (respecting each other, listening to each other, discussing and sharing ideas with each other) created a classroom community resembling a small society.

Moreover, four teachers also reported that pedagogical documentation increased children's *self-awareness*, indicating it gave children a sense of what had been achieved as well as improvements still to be achieved. In the words of one teacher,

It was rewarding to see the faces of children during the sharing time. They felt so proud of their achievement. And that was not it. Through discussion and sharing of their work with others in the class, they also seemed to understand how they can do a better job next time. (YASMINE11-12-08, p. 8)

3.3. Value of pedagogical documentation for parents

To answer to the question, 'How does pedagogical documentation help parents of kindergarten children understand their children's learning experiences in kindergarten?' 67 parents who volunteered to participate in the study were sent a post-documentation questionnaire (in English and Arabic) following the development of the last panel and were asked to express their perspectives on the value of pedagogical documentation. The response rate was lower than that for the pre-documentation survey. Only 22 parents responded to the post-documentation questionnaire. Three major theme categories emerged from the analysis of parents' perspectives on the value of pedagogical documentation: (a) It increases parents' awareness of their children's learning experiences at school;

Table 4

Value of pedagogical documentation for children: a matrix of theme categories.

Theme category	Teachers						Total frequency
	S	A	J	Y	K	L	
It scaffolds children's learning	+	+	+	+	+	+	6
It creates a community of learners	0	+	+	0	+	+	4
It increases children's participation, motivation, and interest in learning	+	0	+	+	0	+	4
It increases children's self-awareness	0	+	+	+	0	0	3

Key: + = perceived as a value of pedagogical documentation for children; 0 = not mentioned as a value of pedagogical documentation for children.

Teacher pseudonyms: S = Sabrina, A = Ally, J = Jamilah, Y = Yasmine, K = Keri, L = Linda.

(b) It increases dialogue with their children and the school; and, (c) It educates parents about effective practices and ways to support children at home.

The analysis of the parents' questionnaire responses revealed that the majority of parents ($n = 19$, 86.36%) believed that pedagogical documentation increased their *awareness of their children's learning experiences at school*. They indicated that documentation panels posted on school walls and the newsletters informed them of classroom activities, what children were learning at school and how they learn. Documentation also gave them opportunities to talk to their children about their experiences at school. As one parent said,

I was able to see what my daughter learns at school, what activities she was offered. When I ask her what she does at school, she usually responds, 'I played, had lunch, and did art' and does not add anything else. Now I can see that she has a rich experience at school, and she talks to me about her experiences when I show her the pictures of her or her friends in the newsletters. (PARENT#17)

Thirteen parents (59.09%) noted that pedagogical documentation increased their *dialogue with their children and the school*. One parent stated, 'The panels provided valuable information that helps me understand my child's learning experiences at school. I had the opportunity to talk to her teacher regarding the conversations of the children posted on the panels' (PARENT#09). Another parent compared her pre-documentation and post-documentation experiences, commenting on the value of the documentation process. The parent wrote,

I was not able to understand if my child was learning at school at all. The only information that I was receiving was the notes that were put in the communication book by the teacher, and the notes were very general (i.e., describing the titles of the lessons that the children studied, a short sentence about the day at school). Now, through the documentation panels, I see what goes on in my daughter's classroom. I am able to ask the teacher what I can do at home regarding the activities that were posted on the panels. (PARENT#12)

Parents also reported that pedagogical documentation offered parents the possibility to exchange ideas with the school. One parent said, 'My child's teacher asked us to give her feedback about what we see on the documentation panels. She asked us to feel free to comment on children's activities and experiences and make suggestions. I found this very positive. ...' (PARENT#18).

Moreover, six parents indicated that the documentation panels were educative and helped them understand how they can support their children at home. As one parent put it,

When I saw that my child is being read the book 'The Very Hungry Caterpillar', the first thing I did was go to the bookstore and buy that book and get the other ones by the same author. I also searched the Internet for activities that can be done related to the book. (PARENT#6)

Three parents found pedagogical documentation an integral method for sharing children's learning experiences with parents. Analysis of parents' responses to the post-documentation questionnaire also revealed that parents developed positive attitudes toward the use of pedagogical documentation and making their children's learning visible to themselves and the wider community.

4. Discussion

In line with the claims of Carr (2001), the present study suggests that pedagogical documentation serves as a communication and dialogue channel among three audiences—children, teachers and

parents. Through the relationships built among these audiences, the target of improving children's learning is reached. First, the findings suggest that pedagogical documentation promotes meaningful dialogue between children and teachers. This dialogue takes place while teachers are observing children, capturing their interactions and negotiating the meaning of their understanding during revisitation. Thus, teachers are able to scaffold children's understanding and take the learning to the next level (Vygotsky, 1986). Second, it enables teachers to share ideas to gain a deeper understanding and appreciation of children's learning and development. This kind of collaboration might also reduce the subjectivity of a single person's analysis and interpretation (Project Zero et al., 2003); thus, pedagogical documentation is strengthened by multiple perspectives. Third, it promotes dialogue between parents, children, and teachers. It adds a transparency to classroom experiences and creates visible traces for parents, providing parents with opportunities to know both what and how their children learn at school. Furthermore, it allows them to see the usually invisible part of their children's life (at school) and experiences. The richness and diversity of children's learning experiences is made available to parents. As noted by Krechevsky and Stork (2000), through this practice, teachers and parents stay close to the learning processes of children.

Furthermore, the present study suggests that pedagogical documentation, as a formative assessment technique, constitutes more than a prescribed or predefined procedure with a framework of expectations or norms; it is a procedure that emerges from the process itself. Documentation is drawn from the eyes of children and teachers and reflects how and what children learn and how teachers interpret this process to improve children's learning. Nothing is predetermined in advance. Each child brings their own way of knowledge construction to the classroom and exists through his or her relationships with others. Cultural and social structures in which children live influence the way they think (Vygotsky, 1978). Teachers observe, capture, analyse and interpret these different ways with their own assumptions. This cycle is different for each group of children and for different teachers with different backgrounds. Thus, this study demonstrated that pedagogical documentation suits the needs of children and teachers from diverse backgrounds and it can be used effectively not only in early childhood education (ECE) programmes in UAE but also in programmes around the world.

Consistent with the findings of MacDonald (2007), this study also suggest that, while it is not easy to adopt and implement pedagogical documentation, it holds potential in highlighting children's learning processes, increasing children's motivation, interest and participation in learning processes, helping them to reflect on and contribute to improve their own learning. Through teacher's self-reports of their use of pedagogical documentation in the classroom, this study shows that, when children's learning is documented, children revisit and interpret their learning experiences and reflect on how to develop these experiences further; this conclusion is also supported by Project Zero et al. (2003). When children are involved in the process, pedagogical documentation is practised or implemented to its full effectiveness. It should be used in early childhood settings where active learning, collaboration, cooperation and discussion are part of the teaching practice (MacDonald, 2007; Project Zero et al., 2003).

This study highlighted that pedagogical documentation provides a basis for teachers' planning. It provides the information needed to adjust teaching and learning while they occur. In this sense, it informs teachers about children's learning experiences at a point when timely adjustments can be made. Furthermore, the rich data collected through pedagogical documentation may serve as a library of collections of children's achievements, which may also be used later for instructional purposes.

In addition to its numerous benefits, the process of pedagogical documentation was not without challenges. None of the participant teachers in the present study said it was easy. When teachers commence documentation, they need time to plan and then to reflect, analyse and interpret once the documentation is in progress. Deciding on the focus documentation, collecting content for panels, collaborating with colleagues, designing and producing documentation panels and sharing them with children and parents require extra effort and time. However, Carr (2001) asserted that the time and effort that documentation takes would be balanced against the perceived educational value. Fraser and Gestwicki (2001) suggested that documentation works best when the work is shared among a group of people involved in the education of children in the school. When the group collaborates, the work is not too overwhelming for any one person, as it was for some of the participant teachers in the present study.

Participant teachers expressed discouragement that parents seem uninterested in viewing the documentation panels. This can engender fairly strong teacher emotion, given the amount of time and reflection that go into the creation of the documentation. However, this should not discourage early childhood teachers in other parts of the world who would like to incorporate this method into their teaching. Parents in UAE generally do not come to school to drop off and pick up their children; instead, many of them have nannies to do these chores for them, or their children take the school bus. As a result, many parents were unable to see the documentation panels posted on the school walls. This problem can be eliminated, as in the present study, through incorporating the documentation panels into newsletters that can be sent home with the children. Another alternative can be creating documentation panels in the form of photo albums (MacDonald, 2007). A third alternative might be to develop a Web-based documentation panel where parents can check the site and obtain information on the classroom activities and learning experiences of their children. This method could also be a solution for the teachers' space concern with respect to the documentation panels.

Participant teachers also noted that children sometimes changed their typical behaviour when they realised the teacher was taking photos of them. This challenge could be overcome if the teacher were to collect the assessment data in authentic settings. This would require the teacher to consider a child or group's unique and individual patterns of development, temperament, interests, dispositions and prior knowledge, and then offer activities that matched their learning styles, of interest, and tasks that they perform well. When involved in activities of their choice, children will likely not be distracted by the teacher or others who are not involved in the activity.

4.1. Implications

The findings of this study provide several implications for research and ECE practices. Considering the linguistic, ethnic and cultural diversity of the student and teacher body involved in this research, this study can set an example for the growing number of diverse early childhood settings in other parts of the world. A majority of the children who were part of this research spoke English as a second language and English was not the first language of four of the six participant teachers. Still, English was the medium for instruction. Acknowledging the variety of the children's linguistic, ethnic, and cultural backgrounds, pedagogical documentation enabled teachers to focus on a range of learning styles, rather than a 'one-size-fits-all' learning style, by allowing children to make sense of the world in their own ways through multiple languages—words, images, drawings, signs, building, sculpture or clay play, socio-dramatic play or music—as in the Reggio Emilia programmes.

However, for those teachers who would like to incorporate pedagogical documentation as a formative assessment technique into their teaching practice, the researcher proposes the following guidelines: First, they should reflect on their teaching beliefs and current teaching practices. Formative assessment works well when the teachers hold the belief that all children can learn if a range of teaching styles is used to cater to different learning styles, likes, dislikes and interests. When using pedagogical documentation as a formative assessment technique teachers should be able to create instructional opportunities adapted to diverse learners; should be able to create learning environments that encourage positive social interaction and active engagement in learning; and, should be able to foster relationships with school colleagues and parents to support children's learning. Next, collaboration with a group of teachers trying out this innovative technique is almost essential. Collegial support is particularly important in overcoming possible parental and administrative oppositions in changing the culture and expectations in the learning environment. As for any innovative technique, support from administrators and parents is also essential. This process should preferably be started with a class at the beginning of the school year so that there is time for all participants to comprehend the pedagogical documentation process. In addition, it would be difficult to change the established classroom routines in the middle of the year.

The present study also has implications for early childhood teacher educators and early childhood teacher education programmes not only in UAE but also in other parts of the world. Skilled and knowledgeable teachers are needed to practice this innovative technique in ECE settings. Knowledge and skills in planning for pedagogical documentation as a method of formative assessment, conducting observations, capturing critical moments of children's interactions and learning experiences, analysing and interpreting evidence of learning, giving feedback to children and supporting them in self-assessment are required by the teachers. Pre-service and in-service early childhood teachers should be supported in developing these skills through their teacher training programmes, and in-service early childhood teachers should be offered continuing professional development workshops on the professional knowledge and skills required for the effective use of pedagogical documentation as a means of formative assessment. They should also be supported in the area of assessing young learners with diverse linguistic and cultural backgrounds.

As a whole, due to the success of diverse group of teachers in using the pedagogical documentation, this study has also implications for ECE policy makers, institutions of higher education, and programmes to adopt policies and practices to recruit and retain a diverse early childhood workforce, with a focus on increasing the number of multilingual and multicultural early childhood professionals in early childhood settings.

4.2. Limitations and further research

One limitation of the current study was the chosen sample. The study utilised purposive sampling. The selected school was private and in a specific geographic location in UAE. The relative power of the qualitative analyses of this study would be increased if the study were conducted in a variety of kindergarten settings with a larger sample size; this is necessary to enhance the generalisability of the study's findings. To further our understanding of the effectiveness of pedagogical documentation, further research should be extended to a broader range of teachers, parents and children. To further our understanding, to validate and better generalize the findings of this study, it should be replicated in early childhood settings in different parts of the world across other settings and with other teachers, children, and parents.

Besides, it is important to note here that, within the framework of this study, the researcher did not study or focus on the specific teaching strategies in these linguistically, ethnically and culturally diverse classes; rather, the focus was the interactions between pedagogical documentation as a formative assessment technique and kindergarten children, teachers and parents and its general degree of utility. This area (how pedagogical documentation works with specific teaching strategies for English as a second language learners or the degree to which it contributes to the language development—home and/or second language—of young children) is one worth researching. Further research that examines the effectiveness of this method with teachers who has expertise and experience in language acquisition, including second language acquisition will also add to the literature on the value of pedagogical documentation for early childhood teachers, young children's learning and understanding of their parents.

5. Conclusion

While it is difficult to assume that pedagogical documentation can be easily adopted and used by any early childhood teacher in any ECE programmes around the world, this study showed the potential of this method to contribute to the learning processes of a diverse group of young children, to the teaching of a diverse group of teachers, and the understanding and awareness of parents regarding their children's school experiences and learning processes. It also showed that assessment involves more than just an evaluation of what a child knows; it addresses learning processes as well as products. Given the increased pressures that exist in kindergarten toward standardised assessments (MacDonald, 2007), the results of this study show that pedagogical documentation as a formative assessment technique can be considered a viable alternative to traditional standardised assessment techniques used in early childhood programmes. It is hoped that this study has contributed to ECE research and practice around the world by promoting a dialogue among ECE policy makers, programme administrators and supervisors, assessment specialists, advocates, and practitioners for much more improved assessment practices for young learners from diverse backgrounds.

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