



# Using video to promote early childhood teachers' thinking and reflection



Sue Cherrington\*, Judith Loveridge

Victoria University of Wellington, Donald Street, Karori, Wellington, New Zealand

## HIGHLIGHTS

- Video and collective dialogue supports EC teachers' reflection on their practice.
- Collective reflection encouraged critique of teachers' own and others' practice.
- Teachers valued professional learning gained from viewing video of their practice.

## ARTICLE INFO

### Article history:

Received 11 June 2013  
Received in revised form  
6 March 2014  
Accepted 9 March 2014

### Keywords:

Early childhood teaching  
Teacher thinking  
Reflective practice  
Video  
Collective dialogue

## ABSTRACT

This article examines findings from a qualitative study employing group stimulated-recall interviews using video-recordings of early childhood teachers to elicit their thinking and reflections about their teaching interactions. It focuses on the value of video to enable teachers to reflect on their practices and the extent to which collectively viewing recorded episodes allows negotiated understandings of their own and other teachers' practices. Whilst these findings suggest that video and collective dialogue are useful professional learning tools for teachers to examine and improve their teaching, structural and relational challenges exist that may impact on how effectively such tools are used.

© 2014 Elsevier Ltd. All rights reserved.

## 1. Introduction

Since Dewey's (1933) pioneering work to improve the quality of schools and education through teacher reflective practice (Yost, Sentner, & Forlenza-Bailey, 2000) numerous empirical studies have focused on understanding the links between teacher thought and action (e.g., see Mena Marcos and Tillema's, 2006, review of 50 studies published between the years 2000 and 2005). The assertion that being able to critically assess and improve pedagogical practices in order to improve outcomes for learners is at the heart of many of these studies.

Whilst overall the literature supports reflection in teaching as positive and a good thing for teachers to engage in, Zeichner (1994) has cautioned against "an uncritical celebration of teacher reflection" (p. 18). Engaging in reflection or making tacit teaching practices explicit is insufficient (Loughran, 2002; Zeichner, 1994;

Zeichner & Liston, 1996). Indeed, Loughran (2002) has argued teachers may rationalise their practices rather than reflect upon them. Furthermore, Zeichner has suggested there is potential for reflection to "legitimate and strengthen practices harmful to students" (1994, p. 18).

Whilst traditionally, reflection has been conceptualised as a predominately individual activity, more recently attention has been given to the collective dimension of reflective practice. Collin and Karsanti (2011) offer a model of interactional reflective practice drawing on Vygotsky's concept of semiotic mediation. In this model, verbal interactions amongst student teachers and their instructors focused on professional practice, and located at Vygotsky's interpsychological level, contributed to the development of student teachers' reflective practice alongside their internalised reflection, at the intrapersonal level.

Davis (2006) has differentiated between productive and unproductive reflection, stating that unproductive reflection is typically descriptive, lacks focus, relies on judgemental framing (such as "I liked...") and does not include analysis or evaluation. In contrast, productive reflection includes questioning assumptions, being open to different perspectives, being analytical, integrating

\* Corresponding author. Tel.: +64 6 364 2448, +64 4 463 9552.

E-mail addresses: [sue.cherrington@vuw.ac.nz](mailto:sue.cherrington@vuw.ac.nz) (S. Cherrington), [judith.loveridge@vuw.ac.nz](mailto:judith.loveridge@vuw.ac.nz) (J. Loveridge).

knowledge, and being able to “see, attend to, and analyse the connections and relationships in a classroom” (Davis, 2006, p. 283). This latter process, Davis argued, is akin to Goodwin’s notion of “professional vision” – a particular view of phenomena shaped by the “social and cognitive organisation of a profession” (1994, p. 626) – applied by Sherin and Han (2004) to refer to teachers learning to see, interpret and think about classroom events significant to teaching and learning. In a similar vein, Marland and Osborne conceptualised such processes as “teacher interactive thinking” (1990, p. 94) to describe teachers’ thinking about their interactions, including how best to relate and respond to students in an individualised manner as a result of interpreting their cues (Mitchell & Marland, 1989).

Much of the research into teacher reflection focuses on schooling or teacher education contexts. Within the early childhood (EC) context, relatively little empirical research has focused on the influence of teachers’ thinking and reflection on their pedagogical interactions with young children. Although aspects of EC teaching are similar to teaching in other sectors, there are also unique aspects which contribute to the complexity of EC teaching. Internationally, teachers in early childhood education (ECE) contexts typically teach with at least one other teacher and, whilst the size of teaching teams varies between and within countries depending on the EC service, team teaching is the norm (Spodek & Saracho, 2005). Required levels of teacher credentials also vary, internationally and within teams. Thus, many teams comprise a mix of staff with degree-level teaching credentials, sub-degree qualifications, or no EC-specific qualification. EC teachers work in close partnership with parents and often with extended families and communities. Daily programmes take place in inside and outdoor contexts, across a range of activities that include play, regular events and routines, and academic work, and may be offered as half-day, school-day or full-day programmes. Due to the age of those in their charge, teachers are involved in both the care and education of young children. This combination of structural and relational features creates particular challenges for EC teachers’ engagement in thinking and reflection about their practices. Thus, it is important to investigate teacher reflection in the context of EC and not rely on findings from research conducted in schooling or teacher education contexts.

This study aimed to provide insights into EC teachers’ thinking and reflection, individually and as members of a teaching team, and how these aspects influenced their use of interactive pedagogical strategies (Cherrington, 2011). This article discusses how teachers’ engagement in collective dialogue about video-recorded episodes of their practice, facilitated reflection and created effective learning opportunities.

### 1.1. *Reflective practice in early childhood education*

Internationally, empirical research has found that being able to reflect on and articulate the beliefs and theories that underpin their practice is challenging for EC practitioners (Moyles, Adams, & Musgrove, 2002; Stephen, 2010; Wood & Bennett, 2000). Similarly, surfacing their teaching intentions and use of pedagogic strategies and behaviours is problematic for teachers uncomfortable with the concept of pedagogy (Siraj-Blatchford, 1999) and who have an intuitive approach to their teaching (Stephen, 2010). The tacit nature of EC teachers’ pedagogical knowledge was evident in Moyles et al.’s (2002) *English Study of Pedagogical Effectiveness in Early Learning* project, and in a Scottish study of how teachers supported young children’s exploration of technological resources (Stephen, 2010). Stephen argued that these “taken-for-granted” (2010, p. 23) attitudes towards pedagogical practices result in practitioners undervaluing their contribution to children’s learning

and limited opportunities to improve teaching through reflection on practice. Moyles et al. (2002) report practitioners’ difficulty in articulating the connections between their “underlying beliefs, their reflection, knowledge and thinking within their practice” (2002, p. 467). Similarly, in the U.S., Kugelmass and Ross-Bernstein’s (2000) case study of an experienced teacher’s interactions with children found discrepancies between the theoretical knowledge and implicit understandings held by the teacher.

Several New Zealand studies have highlighted factors such as time constraints and interpersonal aspects which may challenge EC teachers’ ability to engage in reflection, and which may also be present in ECE contexts beyond New Zealand. Whilst engaging in professional discussions as part of their work-day rather than after-hours enhanced teachers’ involvement in a teacher network (Mitchell, 2003), Healy’s (2012) case study of professional dialogue within a teaching team identified that a lack of time and suitable spaces were barriers to engaging in dialogue. Also influential were the centre’s organisational culture (Healy, 2012), along with employer support for professional learning (Mitchell, 2003). Grey’s (2011) study highlighted the importance of creating a trusting environment where practitioners can engage in professional dialogue about practice; Healy found that social talk was often an important precursor to deeper professional dialogue.

Engaging in collective reflection or professional dialogue (Grey, 2011; Healy, 2012) with colleagues creates opportunities for teachers to de-privatise (McLaughlin & Talbert, 2006) and critique their practices. Teachers engaging in professional dialogue in Grey’s (2011) study noted several benefits: gaining insights into the congruity between their espoused and actual practices, engaging in reflection on their practices, and strengthening relationships between team members. Similarly, teachers in Mitchell’s (2003) study identified that their discussions were a catalyst for thinking about practice, prompting them to re-think their assumptions and beliefs. In her study of EC teachers’ perceptions of teaching science, Edwards (2009) noted the interplay between individual and collective reflections within the teaching team, suggesting that group dialogue had an important role to play in assisting individual teachers to identify and think about their beliefs and pedagogy.

### 1.2. *Using video representations to support teacher reflection*

Video recordings of teachers’ pedagogical practices have been used to foster professional dialogue and reflection. For example, groups of school teachers are viewing and discussing episodes of their teaching in *video clubs* (Sherin & van Es, 2009) whilst Bayat (2010) has suggested that using video to reflect on teaching prompted productive reflection amongst student teachers. Borko, Koellner, Jacobs and Seago argue that video representations of teaching “can be used to create a shared experience, serving as a focal point for teachers’ collaborative exploration of the central activities of teaching” (2011, p. 176). Several studies have noted how using video allows teachers to, in effect, slow down the pace of teaching, facilitating what van Es and Sherin describe as “learning to notice” (2008, p. 245) particular aspects of teaching and learning. Rosaen, Lundeberg, Cooper, Fritzen, and Terpstra (2008) suggest that video records offer unique opportunities for teacher growth, as the dissonance between participants’ memories of their teaching and the video-recorded evidence “jars complacency” (p. 358). Similarly, Zhang, Lundeberg, Koehler, and Eberhardt’s (2011) study found that a key affordance of student teachers viewing video of their own and others teaching was the opportunity to gain new perspectives and “to see things you don’t usually see” (p. 458).

Within ECE contexts, video recordings of teacher practices have helped teachers “perceive discontinuities between their intentions and actions” (Wood & Bennett, 2000, p. 639), and recognise how

tacit knowledge influenced their interactions with children (Kugelmass & Ross-Bernstein, 2000). Moyles et al. (2002) found that reflective dialogues between practitioner and researcher about video-recorded episodes of play surfaced practitioners' tacit knowledge and assumptions, assisted practitioners to critique their own practice, and provided a model of reflective practice that helped them to think more reflectively.

However, using video technology also has its challenges. Haggerty's (1998) study into the implementation of the then recently released New Zealand EC curriculum, *Te Whāriki* (Ministry of Education, 1996), used video as a professional development tool for recording, analysing and discussing curriculum implementation and teacher practices. Although Haggerty found that video was a particularly useful tool for examining the group activity of curriculum implementation, group dynamic issues emerged in some centres, resulting in participant feelings of powerlessness, vulnerability and exposure. Haggerty argued that "the centrality of the team dynamic can tend to introduce a host of possibilities and complexities, which may be markedly different from many school settings, where individual practitioners tend to be considerably more self-contained" (1998, p. 176). Furthermore, participants may feel uncomfortable viewing episodes of their own teaching or find it challenging to critique others' practices (Zhang, Lundeborg, Koehler, & Eberhardt, 2011). Providing clear guidance, particularly when using video with student teachers, on what aspects to attend to is an important element of using video recordings successfully (Santagata & Guarino, 2011).

The structural and relational features of EC contexts outlined above, including team teaching, varied qualifications, and diverse programme structures, which contribute to the complexity of EC practice (Cherrington & Thornton, Submitted for publication) also influence the use of video technology to support teacher reflection. Additionally, aspects of EC teachers' contexts common to school contexts – such as time for collaborative, reflective dialogue and an organisational culture which facilitates trusting professional dialogues – may impact on teachers' ability to engage in reflection on their beliefs and practices. Hence, the findings from this study may have implications for those using video representation to support the collective dimension of reflective practice in EC or schools beyond the New Zealand context.

## 2. Methodology

The research reported here was a multiple-case study situated within a constructive-interpretive paradigm that recognised that teachers participate in, and experience, their world of teaching from their own perspective, and that understandings resulting from this research have emerged from their perspectives. A key benefit of the case study approach used was that it allowed "the researcher to deal with the subtleties and intricacies of complex social situations" (Denscombe, 2007, p. 45, italics in original), and offered a way of examining teachers' perspectives and understandings about their thinking and reflection in actual teaching situations as naturally as possible.

In the multiple-case research design (Yin, 2009) used here, each case was the teaching team within an ECE centre and the centre team was the unit of analysis.<sup>1</sup> The organisation and structure of the third case study (CS) centre meant an adaptation to the research design, whereby three smaller teams within the centre became embedded units of analysis (Yin, 2009). This allowed for within-case analysis at the case level (the whole centre team) and at the

level of each smaller team whilst still preserving the ability to undertake cross-case analysis. Each case was intrinsically bounded (Merriam, 1998), able to be studied individually and separately from the other cases.

Ethical approval for the project was gained from the Victoria University of Wellington College of Education Ethics Committee (COE /2008/14, RM 15639) on 20 May 2008. Informed consent was gained from teachers to video-record their interactions and to share these with their colleagues in the interviews. Parents of children gave informed consent for their children to be video-recorded; care was taken to cease filming if children indicated, verbally or non-verbally, that they were uncomfortable with the presence of the researcher or the use of the video camera.

### 2.1. Data collection

The major data source for this study was group interviews in which teachers viewed episodes of their interactions with children, described their thinking and reflections at the time of the interactions, and engaged in collective reflections with team members about the episodes. Supporting sources of data were reflective journals maintained by the teachers and researcher, observations and field-notes of the programme and centre environment, and transcripts of planning meetings.

#### 2.1.1. Video stimulated recall interviews

Stimulated recall (SR) methodology utilises retrospective reporting to elicit data about cognition on the assumption that "humans have access to their internal thought processes at some level and can verbalize those processes" (Gass & Mackey, 2000, p. 1). Proponents of SR methods argue that it reveals the natural, complex world of professionals who regularly engage in decision-making 'on the wing', allowing them to describe their thinking and decision-making without the interference that 'thinking-aloud' methods have on their activities, especially when these require considerable verbal interaction such as in teaching (Lyle, 2003).

Stimulated recall methods have been used across several disciplines, including education, with increasing popularity over the last two decades. In educational contexts research has examined teachers' thinking and reflection (e.g., Schepens, Aelterman, & van Keer, 2007); teacher beliefs (e.g., Wood & Bennett, 2000); teacher pedagogical knowledge and practices (e.g., Hennessy & Deane, 2009); student teachers and teacher education programmes (e.g., Grainger, 2003); and differences between novices and experts (e.g., Ethell & McMeniman, 2000). Such studies are predominately small-scale, focus on individuals, and utilise case study methodology. Thus, video-SR interviews were an appropriate method for collecting empirical materials in this study.

SR methodology typically involves playing video- or audio-taped episodes of behaviour or interactions to stimulate an individual's recall of their thinking during the actual episode. The participant stops the tape at points throughout the episode to describe his or her thinking at the time. Prompt questions may be used to probe more deeply into participants' thinking (Gass & Mackey, 2000).

Adaptations of traditional individual SR-video interviews are evident, including Moyles et al.'s (2002) use of reflective dialogues to investigate the characteristics of effective pedagogy in EC practitioners. In that study, practitioners and researchers viewed the video-recording independently before watching it together and discussing both the observed practices and their views of effective practice. Collaborative or group SR-video interviews have also been used successfully (Anderson, Nashon, & Thomas, 2009; Hennessy & Deane, 2009) with Anderson et al. noting that "group interaction and engagement and the collective group reflection of learning

<sup>1</sup> For ease of communication, each case is referred to as the CS centre rather than the CS teaching team.

experiences" (2009, p. 192) significantly contributed to participants' recall. The successful use of video-SR in these studies supported the use of a group interview protocol with the teachers in this study.

The key theoretical issue concerning the validity of SR methods is "whether retrospective reports accurately represent access to direct, unordered accounts of previous thought processes without any intermediate ordering of reflections on reasoning" (Lyle, 2003, p. 865). Distinguishing between participants' recall of, and reflection on, an event can be difficult (Gass, 2001). Yinger (1986) suggested participants may respond to the new event of viewing the video recording rather than recall their thinking during the original event. Factors influencing how teachers recall and report their thinking include how they are prepared for the interview process (Calderhead, 1981; Gass & Mackey, 2000), anxiety about viewing themselves on video (Calderhead, 1981), and difficulties in verbalising tacit knowledge (Calderhead, 1981).

Recommended strategies for addressing these issues include scheduling interviews without delay following the recording of events (Gass & Mackey, 2000; Lyle, 2003) and using carefully crafted, standardised instructions (Gass & Mackey, 2000) that emphasise recall of the episode rather than reflection on the event. Unambiguous interview probes (Gass & Mackey, 2000), unobtrusive interviewers (Lyle, 2003), and participant control over when to pause the replaying of the episode (Gass & Mackey, 2000; Lyle, 2003) improve construct validity with this method.

## 2.2. Participating case study centres

Teacher teams from three New Zealand EC centres participated in this research. Moana ELC<sup>2</sup> asked to participate in the study, and having met the selection criteria was selected. Purposeful sampling was used to select two other CS centres in order to reflect the diversity of New Zealand teacher-led ECE centres.<sup>3</sup> Expressions of interest in participating in the study were invited from kindergartens and from education and care centres licensed for children aged under-two years within a specific geographical region, resulting in Summer Kindergarten and Ngā Rangatahi Tamariki ELC being selected for the study. Table 1 below outlines the centres' characteristics.

## 2.3. Data collection rounds

In each centre, the researcher filmed teachers' interactions with children across the programme in preparation for the interviews. Five rounds of filming and interviews were undertaken with each teaching team at Moana ELC and Summer Kindergarten whilst the three smaller teams within Ngā Rangatahi Tamariki each participated in two rounds of filming and interviews.

Each day of filming resulted in two- to 3-h of recorded teaching episodes across the programme, inside and outdoors, intentionally covering a wide range of play contexts, regular events, and routines in order to reflect typical EC teaching activities. Each teacher present was included in recorded episodes, some of which involved more than one teacher. As data collection proceeded, filming became increasingly purposeful to cover the breadth of play contexts and regular programme events, and to ensure teachers were included to a similar degree. Episodes affected by high noise levels,

sun-strike, frequent interruptions or poor quality camerawork were discarded. Up to 60 min of interactions were selected from the remaining material, with selection decisions based on ensuring all teachers and a broad range of situations were included. Appendix A provides details of the teachers, context and length of episodes used in each interview. Episodes longer than 10 min were edited into shorter sections using naturally occurring shifts and transitions (such as when a teacher moved from one play context to another). Selected episodes were edited onto a DVD focussing on each teacher in turn.

The interview protocol drew on Gass and Mackey's (2000) and Lyles's (2003) recommendations for improving construct validity with the video-SR interview process and aimed to encourage teachers to focus on their thinking and actions during the episodes and to manage the interviews as a group process (Calderhead, 1981; Gass & Mackey, 2000; Lyle, 2003). Each 2-h interview was scheduled for the day following video recording to optimise recall, and was video- and audio-recorded. Appendix B outlines the prompt questions developed, instructions given to teachers at the start of each interview, and the researcher's role in the interview process. The teacher involved in each episode selected when to stop the video to recall her or his thinking at the time. Usually, this occurred at the end of each episode, following which other teachers were invited to contribute to the discussion and collective reflection. The audio-tapes were transcribed verbatim and each transcript checked against the audio-tape for accuracy. More than 26 h of video-SR interviews were recorded.

## 2.4. Data coding and analysis

A research journal was kept to record reflections and decisions throughout each stage of the project (Richards, 2005). Interview and staff meeting transcripts, field-notes and teacher reflective journals were uploaded into Nvivo 8, and topic (e.g., coding everything said about individual children) and analytical coding (e.g., teacher references to coping with multiple demands during teaching interactions) undertaken (Richards, 2005).

Both inductive and deductive approaches were drawn upon during data analysis. For example, the key category of *knowing the children* emerged inductively from each case whereas others, such as teachers' understandings of children's learning, were informed by literature. Iterative processes were used for data coding and analysis in order to make sense of the data. Tactics identified by Miles and Huberman (1994) for generating meaning out of the data were used, including noting patterns, clustering data, subsuming specific data into more general categories, and making conceptual links to the data.

Across the broader study, three overarching themes emerged: the alignment behaviours used by teachers as they engaged in their recall and collective discussion about the episodes; the ways in which they build understanding, negotiated meaning, and critiqued their practice; and, the content or focus of their thinking and reflection. Detailed coding categories informing each theme were developed and are described in detail in Cherrington (2011).

## 3. Results

During the interviews, teachers recalled their thinking, engaged in individual and collective reflection, and co-constructed understandings about the episodes, moving fluidly between these activities in their discussions. Data reported here draws from interviews across the three CS centres, reflective journals, and case notes, focussing specifically on how responding to the recorded episodes enabled teachers to reflect on and negotiate understandings of their own and other teachers' practices. Four

<sup>2</sup> All centre and teacher names are pseudonyms.

<sup>3</sup> A diverse range of New Zealand EC services cater for children aged from infancy to 5 years, including kindergartens (catering mostly for three- and four-year old children in sessional programmes) and education and care services (offering sessional and full-day programmes for children from birth to five years).



**Table 1**  
Case study centres characteristics.

	Moana ELC	Summer kindergarten	Ngā Rangatahi Tamariki ELC
Teachers	<i>Rachel</i> , head teacher <i>Jane</i> , teacher <i>Inez</i> , teacher <i>Meg</i> , teacher All teachers qualified; Rachel & Jane full-time; Inez and Meg part-time. Teachers' experience ranged between 1 and 22 years.	<i>Marilyn</i> , head teacher <i>Poppy</i> , teacher <i>Diana</i> , teacher All teachers qualified and worked full-time Teachers' experience ranged between 3 and 11 years	Qualified teachers: <i>Sabby</i> , manager <i>Spring</i> , supervisor <i>Juanita</i> , team leader <i>Bernice</i> , team leader <i>Anastasia</i> , teacher <i>Conrad</i> , teacher <i>Alexis</i> , teacher In-training teachers: <i>Summer</i> , team leader <i>Jayde</i> , teacher <i>Storm</i> , teacher <i>Paige</i> , teacher Unqualified teachers: <i>Giselle</i> , teacher <i>Autumn</i> , teacher All teachers worked full-time. Teachers' experience ranged from 2 years to more than 30 years.
EC service type	Teacher-led, community-based education & care centre	Teacher-led, sessional community- based kindergarten operated by kindergarten association	Teacher-led, community-based education & care centre, operated by a charitable trust
Programme offered	6 h sessions Mon–Thurs; 4 h session Fri	4 h morning sessions Mon–Fri; 2½ hour sessions Mon, Tues, Thurs	Programme offered from 8.30am–3.30pm, Mon–Fri.
Number of children enrolled	Licensed for 23 children; 36 children on roll	Licensed for 43 children in the morning session and 35 in the afternoon group	Licensed for 32, including 24 children aged under-two years; 40 children enrolled.
Age range of children enrolled	2 years, 3 months–4 years, 11 months	2 years, 6 months–4 years, 11 months	4 weeks through to 4 years, 11 months
Children's ethnicities	Almost all NZ European; 2 children of Māori descent and 1 NZ-born Asian	Predominately NZ European, with some children of Māori, Samoan and Chinese ethnicity	Predominately Māori and Pasifika, with some children of NZ European ethnicity.
Unique features of centre	Semi-rural location; managed by parent committee and head teacher; adjacent to local school; parents rostered to provide additional support each session.	Located in seaside suburb, adjacent to local school; association provided governance, professional support, financial & property management; parents often participated in sessions.	Suburban centre located adjacent to school, in purpose-built open-plan facility. Centre operated as three distinct groups (non-mobile infants, crawlers and toddlers; children aged 18 months and older); parents frequently spent time in the centre

themes are discussed here: de-privatising practices through collective dialogue; gaining new insights through viewing the recorded episodes; moving from discussion of specific episodes to broader principles of practice; and, challenges in critiquing practice.

### 3.1. De-privatising practices through collective dialogue

Although teachers in each centre worked alongside each other, their teaching responsibilities meant they had few opportunities to observe their colleagues' teaching interactions. Viewing the recorded episodes as a team de-privatised (McLaughlin & Talbert, 2006) individuals' practices and brought them into the public realm. The interviews provided a forum within which teachers could engage in collective dialogue and reflection-on-action (Schön, 1983, 1987). In this example, Jane, a teacher at Moana ELC, had described her thinking and actions in detail as she joined children's fire-fighter socio-dramatic play outside. Towards the end of her description she summed up her feelings about the challenge of trying to balance her time and engagement between several children, some who were still engaged with the socio-dramatic script and others who were more interested in gaining her attention:

I actually found this instance quite challenging because it came to where everyone was...bidding for my attention and which was quite draining and it wasn't about their play or extending

their play. It was, "Look at what I'm doing", "Well, I can do this" and it's just "Hold on a minute, what's happening here – maybe I need to..."<sup>4</sup>

Her acknowledgement of this challenge sparked a discussion as the teachers analysed the episode and collectively reflected on how else Jane could have responded:

**Meg:**

But you had to have a lot of thinking because you were thinking about the right language to use cos Scott was there, the fact that two of them desperately want to be right there with you...and putting into place the strategies that we've also talked as a team about certain children.

**Rachel:**

What was their agenda, where were they wanting to go there...where should I be taking this...? Should I be doing this or that because that's those three very strong personalities there and is it, did they want you just to yourself or were they really wanting to play together... there was so much going on there that it was almost... if it escalated too much you'd almost need

<sup>4</sup> Ellipses in these extracts represent "fillers" (such as 'you know') used by participants, and which were removed to improve clarity for the reader.

to have said, “Now, we need to stop now boys and listen to each other speak”...and just brought it down a little bit or...

**Meg:**

Well, the fact that Edward wanted to move you twice, from the swings to the bus, then the bus to wherever...

**Rachel:**

Yes, quite persistent

**Meg:**

Was he trying to take you away? Or was he trying to make the play go longer?

**Jane:**

It didn't seem like he was trying to interact with anybody else, it was solely in my...that was the difficult part, that it was bids for my attention which I needed to step back from a little bit or maybe explain clearer: “Well hold on” – of which I did try a couple of times – “...I can't be in two places at once” or maybe just being more assertive and more directive, I don't know.

**Rachel:**

Or directive into something, maybe...even if it was your fire engine song, that great one that you've brought in from the other centre, on the bus there and maybe where would that have gone, perhaps, or...

**Jane:**

Yeah, but see I was thinking, I don't like to...cos it was leading into a dramatic play or something that the children could lead. I didn't want to...say, “All right, let's stop and do something that I...” I dunno, it was a hard one.

This short extract reveals how these teachers drew on their existing knowledge of individual children (e.g., Scott's language development and “those three very strong personalities”); tried to understand what learning agendas were underlying some children's attempts to gain Jane's undivided attention; and recognised teaching approaches (“putting into place the strategies that we've also talked as a team about certain children”) that had been previously agreed within the team. At the heart of the discussion, though, was the attention given to the teaching role(s) that Jane could have used, and the degree of teacher directedness that she needed to adopt in order to manage the situation. The unresolved tension between maintaining control and allowing children's dramatic play to flourish was clearly evident in Jane's acknowledgement: “I dunno, it was a hard one”.

### 3.2. *Gaining new insights through watching the recorded episodes*

There were multiple instances where teachers across the three case studies gained new insights into individual children, their teaching practices, and elements of their programmes as a result of watching the video-recorded episodes.

#### 3.2.1. *Gaining new insights into children*

New insights gained through watching the recorded episodes most often involved individual children. In this example, Meg, a part-time teacher at Moana ELC, had not worked the previous day when an episode was recorded in which a child, Chelsea, was seen observing others making tiaras out of card and elastic. After

watching the episode, Meg commented that she now understood the context for an interaction she had had that morning with Chelsea:

As soon as mum went, she came straight to me and said “I want to make a tiara” – I had no idea about the tiaras. She knew exactly what she wanted – red stripy paper and she drew all the zigzags and she started to cut but it wasn't right, so I had to help her cut the points. Everything, she got the elastic out....

Meg's comments moved the teachers' discussion beyond the video-recorded episode to focus on Chelsea's clear intention to make her own tiara and her use of strategies modelled the previous day by another child. Furthermore, Meg's new insights appeared to have an on-going influence as on several occasions over subsequent interviews she reflected on the level of her interactions with Chelsea and whether Chelsea missed out on adult interactions. Other teachers also appeared to become more aware of Chelsea, her learning interests and their interactions with her, as evidenced by Rachel's comment in the final interview, “Oh I'm working hard on Chelsea. I'm really working hard”.

#### 3.2.2. *Gaining new insights into their practice*

On other occasions, the interview process disrupted teachers' views of their practices. For example, teachers working with the older children's group at Ngā Rangatahi Tamariki had articulated how they worked as a team and supported each other, and the value that they collectively placed on this approach was evident in their interactions (researcher journal) and interview discussions. One episode, however, highlighted that sometimes teachers were placed in situations where support from their colleagues was not readily available. Jayde had been with a group of older children in a small outside area separated from the main playground, and had juggled keeping two children safe whilst they climbed ladders to look at plants and a garden ornament at the top of a bank whilst another child was upset and two other children were arguing. The episode was chosen for the interview because of the multiple interactions demanded of Jayde. Whilst the other teachers acknowledged how well Jayde had managed the situation, it highlighted to them that they had not been there to support her. At the end of this episode, Juanita, the team leader, commented:

We need to look more at where is somebody and who's around me and what I take is “Well, us three are here but actually most of the children are out there with Jayde”...that kind of thing that, looking around the corner rather than...cos that is exactly what takes away from those...teachable moments. The moments that you did have were then completely lost by all that...

Those things are probably something as a team we need to [ask] “Where were we?” “What were we doing when you were there?”

Watching this episode provoked these teachers to reflect on the fit between their espoused philosophy and their actual practices as team members, both in the discussion that followed Juanita's comments and at the end of the interview where they re-visited the issue and discussed how to support individual teachers in challenging situations:

...we need to go, “oh I'll just go round there cos I can see Jayde with that group”. That's something we need to learn about you, not that you change and go, “Heeellp,” we need to go, “Actually look at all of us here. One of us needs to go round and be round there” (Juanita).

### 3.2.3. *Gaining new insights into programme aspects*

Teachers also gained insights into how specific elements of the programme, including caregiving routines, were operating. This was evident for both the toddler and the older group teachers at Ngā Rangatahi Tamariki as they watched and discussed video-recordings of their mealtime routines, events that teachers had voiced often felt chaotic. Early in the toddler group lunchtime episode, Spring had commented, “That was quite a hectic lunchtime actually”, stating that children sitting at the table had constantly gotten up and that there were lots of children in highchairs to feed. As the episode proceeded, Summer noted “it’s interesting that the kids actually sit quite nicely at the table. Whereas looking at it now...I think, because we’re so busy all we see is them getting off the chair”. Later they noted that two of the children sitting at the table, rather than in highchairs, had only been doing so for about a week, altering their perceptions of these children:

**Spring:**

I think this has...highlighted to me about the children that...the things that you miss when you’re busy...

**Summer:**

And the capability that they actually have.

Whilst these teachers’ collective sense of their mealtime routines was that they were a busy, chaotic time as they coped with the demands of feeding young children still in highchairs, making sure that the older children were safe and behaving appropriately at the lunch tables, and engaging with conversations with the children whilst they ate, viewing the video-recordings away from the pressure of the routine enabled these teachers to see much more clearly the children’s capability in negotiating the lunchtime social mores.

### 3.3. *Moving from specific to general principles of practice*

Teachers also identified and discussed general principles of practice and broader issues related to their work, underpinning the specific situations that they had been viewing. In each centre, multiple examples of teachers’ identifying principles of practice (such as supporting children’s transitions into the centre) and issues (such as the role of computers in ECE programmes) emerged. Teachers at Summer Kindergarten were particularly adept at broadening their discussion beyond specific episodes. In one instance, having watched an episode where Poppy had helped children on the swings, Diana picked up on Poppy’s belief about the importance of children enjoying themselves at kindergarten without always having to have a particular learning outcome in mind, and shifted the discussion towards a philosophical debate about the purpose of ECE in general and assessment practices in particular. Diana expressed her concern that the increased pressure to document and assess children’s learning that had developed within New Zealand ECE was changing how teachers’ viewed and interacted with children:

I’ve noticed it’s starting to affect the way you think about how you interact with children, and what’s happening when you’re playing with children, and when you’re working with children.

Now, it’s sort of like there’s a higher value placed on certain activities, or certain experiences or interactions that you’re having, and a lesser on other ones; and I think that that is really an outcome of this drive with the planning, assessment, and

evaluation that has been such an on-going over the last few years...

...I do have to say, well, to whose benefit is it actually all for at the end of the day? And we have to be careful that it doesn’t become...detrimental.

Diana also expressed her view that the audience for pedagogical documentation had shifted from children and teachers to parents and government agencies, and that assessment and planning processes had become dominated by adult agendas. She argued:

...and I think that we need to really take a breath and say...before we get too carried away here, what...are the children – where are the children in this?

Poppy then drew the discussion back to her practice, applying Diana’s points to her own thinking and practices when selecting what learning to focus on in the Learning Stories (Carr, 2001) she wrote for children. She commented that whilst she regularly included stories about the social learning and fun that children had on the swings, these stories were predominately written for younger children and “I probably wouldn’t think of it as such valuable learning” for the older children. Their discussion then focused on the tension these teachers felt in trying to interpret what was significant learning for children. A recent programme innovation whereby children were given a digital camera to record images to go in a *Goodbye* story during their last days before going to school had had a powerful impact on the teachers because what children had chosen to photograph had often been completely unexpected. As a result, these teachers were thinking about how they knew what learning children felt was important to document, and the potential mismatch between their interpretations of children’s learning and the children’s perspectives.

### 3.4. *Challenges in critiquing practice*

Although collectively viewing the episodes de-privatised teachers’ practices and offered opportunities for them to gain new understandings and insights about what was happening in their centre, few instances were evident where these teachers engaged in in-depth critique about either their own or their colleagues’ practices. Examples such as the discussion outlined in Section 3.2.2 were relatively uncommon. Rather, teachers were more likely to emphasise being “in tune” with each other, make supportive comments or offer advice on practice, such as when Spring responded to an episode involving Autumn by saying:

So you probably could have drawn the kids in more and kept them there by talking to them ...like your voice and your excitement for the activities could keep them there.

In addition, teachers did not generally subject their own or others’ knowledge about children to critique. Teachers seldom surfaced and discussed their assumptions and beliefs that may affect how they interpreted their knowledge about children. Those occasions where such discussions were held occurred most often when teachers engaged in collective reflections, suggesting that opportunities for collaborative dialogue and reflection are important for enabling teachers to critique their knowledge and interpretations about children.

#### 4. Discussion and implications

The usefulness of viewing and discussing the video-recorded episodes together was evident in the first three themes reported. The free-flow of the programme between the indoors and outside playground and the multiple demands on their time meant that teachers were seldom able to observe each other's practices in action, nor did they have time within the context of busy routine events to step back and reflect on children's capabilities. Furthermore, viewing episodes of their teaching collectively provided opportunities for broader philosophical dialogue, including consideration of ethical and political issues related to practice. Data from the interviews, teacher journals and researcher journal indicated that the video-recordings allowed teachers in each centre to collectively view and discuss their teaching in a way that was not part of their usual team practice but which they found valuable. As Rachel commented:

I must admit, it is a very good professional development, isn't it? To, to watch and see how we teach or even body language and stuff... (interview 2).

More specifically, data from the interviews, together with teachers' reflective journals, illustrate the value of using video and collective dialogue to enable EC teachers to engage in reflection on their own practices: "After watching the DVD and hearing what other people had to say about it, made me think about what I should be doing" (Giselle, reflective journal). Such de-privatising of teachers' practices using video is acknowledged in the literature on professional learning communities (PLC) in the schooling sector (e.g., Borko, Jacobs, Eiteljorg, & Pittman, 2008; Sherin & Han, 2004). Within EC, Moyles et al. (2002) reported that engagement in reflective dialogues based on video-recorded episodes, enabled practitioners to become more reflective and increased their understanding of their own practice and its impact on children's learning.

Data presented here illustrates how teachers' mutual engagement in viewing and discussing episodes can lead to new insights about their own practices, programme routines, and their understandings of children in line with Borko et al.'s (2011) assertion that the use of video enables collective exploration of teaching. The combination of three factors was important in supporting these teachers' engagement: first, the visual record of the episode enabled participation, whether teachers had been part of the episode or not; second, the opportunity to hear others' perspectives on the situation, from an insider (focus teacher) and outsider (other members of the team who had not been part of the situation) stance; and third, being able to collaboratively reflect-on-action (Schön, 1983, 1987) without the pressure to respond to children in the moment of the interaction. Being able to view the actual episode and also gain additional information from the teacher(s) involved was critical to developing collective understandings about the situation. Similar findings were noted in Zhang et al.'s (2011) study of the affordances and challenges of using different types of video where the lack of context that accompanied the use of published video (not involving participants or their colleagues) limited teachers' discussion and learning. The usefulness of the video record for teachers to reflect on their practice away from the intensity of the teaching moment has been noted in earlier research (e.g., Tripp & Rich, 2012; Zhang et al., 2011).

Teachers' engagement in collective dialogue had several outcomes. Across all the centres, teachers acquired new knowledge (e.g., about individual children) but also collectively negotiated meaning as they fine-tuned their understandings and practices through the process of articulating and discussing their interactive

thinking (Marland & Osborne, 1990) and their reflection-in- and -on-action (Schön, 1983, 1987). The de-privatisation of Jane's practices as she endeavoured to balance her belief in following children's learning interests with managing children demanding her undivided attention provided a context for the Moana ELC teachers to explore some of the complexity inherent in their teaching roles and to consider alternative strategies that Jane might have used.

Sharing their knowledge and understandings about individual children during the interviews strengthened teachers' collective knowledge about children and their learning interests, and contributed to changes in teachers' practices evident across interviews. The insights Meg gained about Chelsea's experiences with the tiara-making activity caused her to reflect on the extent to which she interacted with Chelsea more generally in the programme and to monitor her interactions with Chelsea throughout the rest of the data collection period.

However, viewing these video-recorded episodes did not consistently result in teachers' critiquing their own or others' practices. To some extent, this general lack of critique may be an artefact of the research design (which narrowed the focus of teachers' reflection and thinking to their interactions with children) and the interview protocols which did not explicitly ask teachers to critique their own or others' practices, or give opportunities during subsequent interviews to re-visit and reflect further on previously discussed episodes. Given the limited number of interviews that each teacher participated in, the absence of critique may also indicate that these teachers were still gaining confidence in viewing and discussing their practices together, and were more reflective of what van Es (2012) describes as beginning or intermediate, rather than high-functioning communities of practice.

Timperley and Robinson (2001) also suggest that to bring about change in teacher's schema requires three conditions: the salience of discrepant data, the presence of an external agent to assist with the interpretation of those data and the availability of information on alternative practices. It may be that some of these conditions are also pertinent to establishing a more critical stance from teachers in viewing visual data and critiquing their own or others' knowledge and practice.

Furthermore, literature indicates that supportive structural and relational conditions are required to support effective PLCs (Cherrington & Thornton, Submitted for publication; Hipp & Huffman, 2010; Hord & Sommers, 2008; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006). Thus, building trust, managing group dynamics and supporting members to feel safe when de-privatising their practices (Borko et al., 2008; Hipp & Huffman, 2010; Stoll et al., 2006) alongside providing time and space for teachers to talk together, are necessary precursors to teachers strengthening critique of their practices.

Despite the limited critique of practice evident, at times teachers lifted their gaze beyond the immediacy of their practices to consider the influence of macro-level issues, such as government policy directions, on their teaching. Discussions such as that had by the Summer Kindergarten teachers described in Section 3.3 shifted their reflection to considering moral and ethical aspects of their teaching. This use of video records and collective dialogue created similar possibilities as in Mitchell's study where teachers in her network used examples of pedagogical documentation to "question assumptions, values and beliefs about broader goals of education" (2003, p. 24). Thus, video-recorded episodes of teacher practice have the potential to stimulate critical reflection, including consideration of wider political and policy influences, on teacher practices.

The adaptation to SR-video interviews used in this study recognised the collective, team-based nature of EC teaching, enabling



collaborative discussion and negotiation of meaning about their practices to occur. Greater understandings of practice, both at the individual and collective level, were able to be elicited than would have been possible with interviews completed individually with teachers. Furthermore, the two-part model, whereby the focus teacher first recalled his or her thinking at the time of the episode, followed by the group discussion and reflection offers possibilities for designing professional learning programmes.

#### 4.1. Implications

The finding that these teachers' engagement in collaborative reflection, based on video-recorded episodes of their practice, contributed to their thinking and reflection is supported by the literature beyond ECE contexts (e.g., Borko et al., 2011; Yost et al., 2000; Zeichner & Liston, 1996). This study adds to the limited international empirical evidence on EC teacher thinking, reflection and professional learning, and highlights important implications for how to support ECE teachers to enhance their thinking, reflection and practices.

Across different data sources, teachers in each centre indicated that they found the video-stimulated recall process a powerful form of professional development. It created opportunities for shared dialogue, gave teachers a broader view of what was happening in the centre, and enabled them to focus on aspects not visible to them during the busyness of their teaching. This detailed and in-depth focus also supported these teachers to engage in productive reflection (Davis, 2006).

A growing body of empirical evidence is pointing to the usefulness of video as a tool for enabling close examination of teaching practices by teachers (e.g., Bayat, 2010; Haggerty, 1998; Moyles et al., 2002; Sherin & van Es, 2009; Wood & Bennett, 2000; Zhang et al., 2011). The findings from this research support the use of video-recorded episodes of teacher practice as the basis for developing shared understandings and discussion of pedagogical practices. However, more research is required into how professional learning programmes in the EC sector can effectively draw upon the use of video, including using approaches such as *video clubs* (e.g., Sherin & van Es, 2009; van Es, 2012) and reflective dialogues (Moyles et al., 2002).

Data from this study have demonstrated the positive influence of collective dialogue on teachers' reflection on their practices. These findings concur with those in Grey's (2011) study where teachers noted several benefits from engaging in collective dialogue. However, to effectively engage in such dialogue teaching teams require external structural support (e.g., time and spaces for regular, on-going meetings) (Healy, 2012; Stoll et al., 2006) and internal processes that build trust (Grey, 2011; Hipp & Huffman, 2010; Stoll et al., 2006) and which turn conversations towards teaching (Horn & Little, 2010) and critique of practice (Timperley & Earl, 2008). Whilst many EC services will have the internal capacity to develop such collective dialogue processes, as evidenced to some extent by the centres in this study, New Zealand evidence suggests others lack the necessary leadership and culture of reflective practice and professional learning (New Zealand Education Review Office, 2009). Supporting such services is likely to require significant investment of professional development over extended periods in order to address attitudinal aspects and develop knowledge and skills to be able to engage in reflective dialogues with team members. Given the diversity of ECE provision internationally, these issues may well be evident elsewhere.

Discussions of the impact of structural constraints on teachers engaging in collaborative reflective discussion with each other are evident in the literature (e.g., Aitken, 2005; Nuttall, 2004). Many services struggle to find sufficient time for teachers to meet

regularly to discuss issues of teaching and learning (Aitken, 2005; Healy, 2012; Nuttall, 2004). Resourcing regular opportunities for teachers to engage in collaborative, reflective dialogue is important for the development of shared, consistent understandings of teacher roles, especially where teachers' concepts of these are undergoing change, and for the on-going reflection and critique of teachers' practices and examination of children's learning. Within such opportunities the use of video-recordings of teachers' interactions with children may be a powerful tool to assist teachers in articulating their thinking and reflections and in developing shared understandings of practice.

#### Acknowledgements

The teachers in the three centres are thanked for their willingness to participate in this project and to share their thinking and reflections. My supervisors, Dr Judith Loveridge and Professor Luanna Meyer, are thanked for their guidance, challenge and support throughout the PhD project from which this article is drawn.

#### Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.tate.2014.03.004>

#### References

- Aitken, H. (2005). *Participating in an early childhood community of practice: The experiences of a group of newly qualified teachers*. Unpublished Masters thesis. University of Waikato.
- Anderson, D., Nashon, S., & Thomas, G. (2009). The evolution of research methods for probing and understanding metacognition. *Research in Science Education*, 39(2), 181–195.
- Bayat, M. (2010). Use of dialogue journals and video-recording in early childhood teacher education. *Journal of Early Childhood Teacher Education*, 31(2), 159–172.
- Borko, H., Jacobs, J., Eiteljorg, E., & Pittman, M. (2008). Video as a tool for fostering productive discussions in mathematics professional development. *Teaching and Teacher Education*, 24(2), 417–436.
- Borko, H., Koellner, K., Jacobs, K., & Seago, N. (2011). Using video representations of teaching in practice-based professional development programs. *ZDM Mathematics Education*, 43, 175–187.
- Calderhead, J. (1981). Stimulated recall: a method for research on teaching. *British Journal of Educational Psychology*, 51, 211–217.
- Carr, M. (2001). *Assessment in early childhood settings: Learning stories*. London: Paul Chapman.
- Cherrington, S. (2011). *Early childhood teachers' thinking and reflection within their communities of practice*. Unpublished PhD thesis. Wellington, New Zealand: Victoria University of Wellington.
- Cherrington S. and Thornton K., The nature of professional learning communities in New Zealand early childhood education: An exploratory study, submitted for publication.
- Collin, S., & Karsanti, T. (2011). The collective dimension of reflective practice: the how and why. *Reflective Practice: International and Multidisciplinary Perspectives*, 12(4), 569–581.
- Davis, E. (2006). Characterizing productive reflection among preservice elementary teachers: seeing what matters. *Teaching and Teacher Education*, 22(3), 281–301.
- Denscombe, M. (2007). *The good research guide for small-scale social research Projects* (3rd ed.). Maidenhead: Open University Press.
- Dewey, J. (1933). *How we think: Are statement of the relation of reflective thinking to the educative process*. Chicago: Henry Regnery.
- Education Review Office. (2009). *Implementing self review in early childhood services*. Retrieved 6/04/2011 from [http://www.ero.govt.nz/National-Reports/\(category\)/Early%20Childhood/\(categoryid\)/1](http://www.ero.govt.nz/National-Reports/(category)/Early%20Childhood/(categoryid)/1).
- Edwards, K. (2009). *The inside story: Early childhood practitioners' perceptions of teaching science*. Unpublished Masters thesis. Victoria University of Wellington.
- van Es, E. (2012). Examining the development of a teacher learning community: the case of a video club. *Teaching and Teacher Education*, 28(2), 182–192.
- van Es, E., & Sherin, M. (2008). Mathematics teachers' "learning to notice" in the context of a video club. *Teaching and Teacher Education*, 24, 244–276.
- Ethell, R., & McMeniman, M. (2000). Unlocking the knowledge in action of an expert practitioner. *Journal of Teacher Education*, 51(2), 87.
- Gass, S. M. (2001). Innovation in second language research methods. *Annual Review of Applied Linguistics*, 21, 221–232.
- Gass, S., & Mackey, A. (2000). *Stimulated recall methodology in second language research*. Mahwah, NJ: Lawrence Erlbaum.
- Goodwin, C. (1994). Professional vision. *American Anthropologist*, 96(3), 606–633.

- Grainger, S. (2003). *Accessing the professional artistry of teaching*. Australia: Griffith University. Unpublished PhD Thesis.
- Grey, A. (2011). Professional dialogue as professional learning. *New Zealand Journal of Teachers' Work*, 8(1), 21–32.
- Haggerty, M. (1998). *Sighting, citing and siting Te Whāriki: Exploring the use of video feedback as a tool for critical pedagogy: The experiences of five early childhood centres*. Unpublished MEd Thesis. Victoria University of Wellington.
- Healy, C. (2012). *Overlapping realities: exploring how the culture and management of an early childhood education centre provides teachers with opportunities for professional dialogue*. Unpublished MEd Thesis. Victoria University of Wellington.
- Hennessy, S., & Deane, R. (2009). "Intermediate theory" building": Integrating multiple teacher and researcher perspectives through in-depth video analysis of pedagogic strategies. *Teachers College Record*, 111(7), 1753–1795.
- Hipp, K. K., & Huffman, J. B. (2010). *Demystifying professional learning communities: School leadership at its best*. Lanham, MD: Rowman & Littlefield Education.
- Hord, S. M., & Sommers, W. A. (2008). *Leading professional learning communities*. Thousand Oaks, CA: Corwin Press.
- Horn, I., & Little, J. (2010). Attending to problems of practice: routines and resources for professional learning in teachers' workplace interactions. *American Educational Research Journal*, 47(1), 181–217.
- Kugelmass, J., & Ross-Bernstein, J. (2000). Explicit and implicit dimensions of adult–child interactions in a quality childcare center. *Early Childhood Education Journal*, 28(1), 19–27.
- Loughran, J. (2002). Effective reflective practice: in search of meaning in learning about teaching. *Journal of Teacher Education*, 53(1), 33–44.
- Lyle, J. (2003). Stimulated recall: a report on its use in naturalistic research. *British Educational Research Journal*, 29(6), 861–878.
- Marland, P., & Osborne, B. (1990). Classroom theory, thinking, and action. *Teaching and Teacher Education*, 6(1), 93–109.
- McLaughlin, M., & Talbert, J. (2006). *Building school-based teacher learning communities. Professional strategies to improve student achievement*. New York: Teachers College Press.
- Mena Marcos, J., & Tillema, H. (2006). Studying studies on teacher reflection and action: an appraisal of research contributions. *Educational Research Review*, 1, 112–132.
- Merriam, S. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.
- Ministry of Education, Te Whāriki: *Early childhood curriculum*. (1996). Wellington: Learning Media.
- Miles, M., & Huberman, A. (1994). *Qualitative data analysis: an expanded sourcebook* (2nd ed.). Thousand Oaks, CA: SAGE.
- Mitchell, L. (2003). Shifts in thinking through a teachers' network. *Early Childhood Folio*, 7, 22–27.
- Mitchell, J., & Marland, P. (1989). Research on teacher thinking: the next phase. *Teaching and Teacher Education*, 5(2), 115–128.
- Moyles, J., Adams, S., & Musgrove, A. (2002). Using reflective dialogues as a tool for engaging with challenges of defining effective pedagogy. *Early Childhood Development and Care*, 172(5), 463–478.
- Nuttall, J. (2004). *Why don't you ask someone who cares? Teacher identity, inter-subjectivity, and curriculum negotiation in a New Zealand childcare centre*. Unpublished PhD thesis. Victoria University of Wellington.
- Richards, L. (2005). *Handling qualitative data: A practical guide*. London: SAGE.
- Rosaen, C. L., Lundeberg, M., Cooper, M., Fritzen, A., & Terpstra, M. (2008). Noticing noticing: how does investigation of video records change how teachers reflect on their experiences? *Journal of Teacher Education*, 59(4), 347–360.
- Santagata, R., & Guarino, J. (2011). Using video to teach future teachers to learn from teaching. *ZDM Mathematics Education*, 43(1), 133–145.
- Schepens, A., Aelterman, A., & van Keer, H. (2007). Studying learning processes of student teachers with stimulated recall interviews through changes in interactive cognitions. *Teaching and Teacher Education*, 23(4), 457–472.
- Schön, D. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Schön, D. (1987). *Educating the reflective practitioner: Towards new design for teaching and learning in the professions*. San Francisco: Jossey-Bass.
- Sherin, M., & Han, S. (2004). Teacher learning in the context of a video club. *Teaching and Teacher Education*, 20(2), 163–183.
- Sherin, M., & van Es, E. (2009). Effects of video club participation on teachers' professional vision. *Journal of Teacher Education*, 60(1), 20–37.
- Siraj-Blatchford, I. (1999). Early childhood pedagogy: Practice, principles and research. In P. Mortimer (Ed.), *Understanding pedagogy and its impact on learning*. London: Paul Chapman.
- Spodek, B., & Saracho, O. N. (Eds.). (2005). *International perspective on research in early childhood education*. Greenwich, CT: Information Age Publishing.
- Stephen, C. (2010). Pedagogy: the silent partner in early years learning. *Early Years*, 30(1), 15–28.
- Stoll, L., Bolam, R., McMahon, A., Wallace, M., & Thomas, S. (2006). Professional learning communities: a review of the literature. *Journal of Educational Change*, 7, 221–258.
- Timperley, H., & Earl, L. (2008). Using conversations to make sense of evidence: possibilities and pitfalls. In L. Earl, & H. Timperley (Eds.), *Professional learning conversations: Challenges in using evidence for improvement* (pp. 121–126). Dordrecht: Springer.
- Timperley, H., & Robinson, V. (2001). Achieving school improvement through challenging and changing teachers' schema. *Journal of Educational Change*, 2, 281–300.
- Tripp, T. R., & Rich, P. J. (2012). The influence of video analysis on the process of teacher change. *Teaching and Teacher Education*. <http://dx.doi.org/10.1016/j.tate.2012.01.011>.
- Wood, E., & Bennett, N. (2000). Changing theories, changing practice: exploring early childhood teachers' professional learning. *Teaching and Teacher Education*, 16, 635–647.
- Yin, R. (2009). *Case study research: Design and methods* (4th ed.). Los Angeles: Sage.
- Yinger, R. (1986). Examining thought in action: A theoretical and methodological critique of research on interactive teaching. *Teaching and Teacher Education*, 2(3), 263–282.
- Yost, D., Sentner, S., & Forlenza-Bailey, A. (2000). An examination of the construct of critical reflection: implications for teacher education programming in the 21<sup>st</sup> century. *Journal of Teacher Education*, 51(1), 39–49.
- Zeichner, K. (1994). Research on teacher thinking and different views of reflective practice in teaching and teacher education. In I. Carlgren, G. Handal, & S. Vaage (Eds.), *Teachers' minds and actions: Research on teachers' thinking and practice* (pp. 9–27). London: Falmer Press.
- Zeichner, K., & Liston, D. (1996). *Reflective teaching: An introduction*. Mahwah, NJ: Lawrence Erlbaum.
- Zhang, M., Lundeberg, M., Koehler, M. J., & Eberhardt, J. (2011). Understanding affordances and challenges of three types of video for teacher professional development. *Teaching and Teacher Education*, 27(2), 454–462.