Australian Journal of Teacher Education

Volume 47 | Issue 12 Article 1

2022

Increasing In-Service Teachers' Willingness to be Videoed to Support Professional Learning

Marie-Christina Edwards
Acadia University, Canada

Recommended Citation

Edwards, M. (2022). Increasing In-Service Teachers' Willingness to be Videoed to Support Professional Learning. *Australian Journal of Teacher Education, 47*(12). https://doi.org/10.14221/1835-517X.5052

Increasing In-service Teachers' Willingness to be Videoed to Support Professional Learning

Marie-Christina Edwards, Acadia University, Canada

Abstract. Increasing and compelling research demonstrates the affordances of personal video footage as an informative and transformational tool in teacher professional learning (PL), yet many in-service teachers avoid engaging in this practice. This Australian Research Council funded study tracked teacher willingness to use video to capture the application of PL over 12 months in a rural Australian primary school. Data from questionnaires, video-based learning conversations, and collaborative sharing sessions demonstrated a strong increasing trend in the number of teachers volunteering to be videoed across three iterations of research. Thematic analysis highlighted five key factors as catalysts for increased teacher participation in engaging with video as a professional learning (PL) tool. These factors include – safe relationships and the building of relational trust; personalized connection of PL to classroom practice; an effective video annotation repository system; teacher agency within an iterative structure; and time – the need for external support systems. This study found that when these factors were addressed, willingness to engage in using the power of video as a tool to support teacher PL increased.

A Call for Teacher Volunteers to be Videoed

I was excited to provide PL to 30 teachers at a low socioeconomic primary school in rural Tasmania, Australia. These teachers were seeking PL on self-regulation to improve stress management. After engaging in PL early in the school term, I offered to video them in their classrooms and follow this up with a learning conversation to discuss their application of the PL to their practice. I was surprised when only three volunteers stepped forward. One, the fine arts specialist teacher, embraced the opportunity, followed somewhat reluctantly by two others, who voiced their anxieties about being videoed. Why did other teachers decline this invitation, and why, over the course of my research did the number of willing teachers triple?

In this paper, I draw on the literature to investigate how video use in PL, share claims of affordances of video as a PL tool, and describe reported factors for teacher avoidance of being videoed. My paper adds to the literature by suggesting factors that increase teacher willingness to be videoed and through the adaptation of an iterative model of PL. The context, process, methods, and analysis that resulted in the extraction of the five factors are described using a design-based research methodology framework. These five factors played a significant role in increasing teacher willingness to be videoed.

Video Use to Support Teacher PL: Affordances, Aversions, and Recommendations

In this research, I selected video as a tool to enhance teacher PL as the literature framed the scope and effectiveness of this practice (Hollingsworth, 2005; Major & Watson, 2018; Marsh & Mitchell, 2014; Zhang et al., 2011). The use of video was integrated across this study in various ways including videoing teachers in their learning environments as a PL tool. Claims in the literature affirm that learning occurs when teachers analyse videos of their own or colleagues' practice (Hollingsworth, 2005; Sherin & Han, 2004; Zhang et al., 2011). Marsh and Mitchell (2014) report that video-based learning occurs predominantly asynchronously (with learning occurring *after* the filming), and less frequently, synchronously (with learning occurring *during* the filming). This research employed asynchronous video-based learning, allowing the participants and researcher multiple independent and collaborative viewings. Reported affordances of video-based learning involving mentorship (Davey & Ham, 2010) and peer discussion (Kleinknecht & Schneider, 2013), facilitated group discussions (Coles, 2013), and video clubs (Sherin & Han, 2004) are shared within the literature and elements of each of these modes were part of this research.

Promising evidence suggests PL supported by video can be effective (Borko et al., 2008; Marsh & Mitchell, 2014; Zhang et al., 2011) due to the capacity to capture the complexity of dynamic contexts, provide rich stimuli for discussion and reflection, and review and analyse data multiple times from different perspectives (Hollingsworth, 2005; Marsh & Mitchell, 2014). Given these reported affordances, a recurring question was, why do teachers avoid being videoed to support their PL (Dickerson et al., 2007; Ng, 2015; Zhang et al., 2011) and what can be done to increase teacher willingness in using video as a powerful professional tool?

Teacher aversion to being videoed was highlighted in the literature with reports of heightened teacher anxiety due to feeling self-conscious about appearance and/or voice and threats to professional self-esteem (Dickerson et al., 2007; Zhang et al., 2011). Teachers expressed concern regarding the time-consuming nature of videoing, including collecting permissions and equipment and potential technical complications; and the disruption that videoing can cause to students deterring them from choosing video as a PL option (Dickerson et al., 2007; Zhang et al., 2011). It is promising to note that teachers who were videoed, despite initially feeling anxious, reported a reduction in anxiety as they acclimatised to the experience (Ng, 2015; Zhang et al., 2011).

Despite evidence of video as an effective tool in supporting PL, research suggesting *how* to increase teacher willingness to be videoed was elusive. My research therefore drew on the relevant, albeit somewhat dated research, conducted by Dickerson et al. (2007). Their research guided me in reducing elements believed to discourage teachers from being videoed (Tab. 1).

Dickerson et al (2007) suggested actions	Applied in this research	Notes
Provide equipment and help with setting up	x	I sourced and set up equipment
Emphasize that videotapes will be viewed only by the teachers and others of their choosing	x	
Teachers will decide on specific aspects of teaching to be examined – not every aspect		Teachers were aware that application of self-regulation PL was the focus
Provide suggestions for looking at positive teaching behaviours not just negative ones	x	Positive examples of successful application of PL

Suggest ways of making the process less intrusive	x	
Be willing to videotape yourself and allow others to critique		Although I did not video myself in others' classes, I taught up to 4 lessons in each class and video myself giving personalised PL summaries for additional viewing.
Discuss the difference between using video tapes for PL rather than for the purposes of evaluation	x	Participants were aware that the video was for PL purposes only.

Table 1: Application of suggested actions to encourage video use Dickerson et al. (2007)

This 12-month study, part of a wider Australian Research Council Linkage Project, saw a three-fold increase in teacher willingness to be videoed. This paper explains factors that enabled this increase.

Research Design

The methodology chosen for this study was design-based research (DBR). Anderson and Shattuck (2012) describe DBR as:

- conducted within the context
- involving strong collaboration between the participants and the researcher
- consisting of multiple iterations
- using a mixed methods approach
- focusing on the design and testing of an intervention
- seeking to evolve a set of design principles.

Designed specifically to draw together research and practice in education, DBR's structured yet pragmatic framework was conducive to the primary school context of this research. The pragmatic and reflexive mixed methods approach allowed for the selection and application of methods based on their "utility for furthering the research project rather than because of their abstract "power" or refinement" (Herrington et al., 2007, p. 4094). Ontologically, multiple realties and perspectives were valued, and epistemologically, I "collect[ed] data by 'what work[ed]' to address [the] research question" (Creswell & Plano Clark, 2017, p. 38). An example of this reflexivity and responsiveness was the adjustment of questionnaire prompts in response to learning of participants' increase in allostatic load (McEwen, 1998) to invite their reflection and capture this in the data.

Research Context

This study was conducted in a low socioeconomic school in Tasmania that catered to students aged 4 to 12 in Kindergarten through to Grade 6. With 88% of the 300 students in the bottom quarter of the Index of Community Socio-Educational Advantage (Australian Curriculum Assessment and Reporting Authority, 2019), the 30 full-time and part-time staff set school goals around student and staff well-being. High incidences of dysregulated student behaviour resulted in significant human, infrastructure, and PL resources to be directed to behaviour support. This included prioritising teacher PL to increase teachers' understanding and application of self-regulation to support their own stress management. Although the total

number of staff was 30, research elements (PL and data collection) only occurred for those present at specific staff meetings. Some staff members participated in all elements whilst others were only present for a few. Participants were invited to be videoed on four separate occasions over the course of the research to capture and discuss their application of the PL.

All elements of the research occurred within regular school timetables and routines. Professional learning segments, group conversations, and questionnaires occurred in regular staff meeting times; video recording for PL (VRPL) occurred during lesson times; and individual learning conversations with participants based on their videos were conducted during release time provided by the school. Ethical clearance was provided by the Human Research Ethics Committee (Tasmania) Network.

Collaboration Between Participants and Researcher

Collaboration between researchers and participants underpins DBR. I worked collaboratively with a group of participants to negotiate, inform, and oversee the research. Group members were nominated to organise video and conversation schedules and collect permissions and I sourced equipment and uploaded of video footage. As an external researcher, with almost three decades of personal experience working as a teacher and leader in schools, I took on multiple roles within the research. These roles included PL presenter, discussion facilitator, videographer, mentor, data collector and analyser, and project leader. To position myself openly and authentically within the research (Dodgson, 2019), I declared the intersecting contextual relationship created by my background and the many roles within the research by engaging in reflexive journalling throughout the research.

I prioritised establishing and maintaining relationships conducive to effective collaboration and did this by working alongside participants in their classrooms, attending various PL sessions, and engaging in staffroom conversations. In this way, I gained a deeper understanding of the research context and connected with participants. At the culmination of this initial introduction, I presented a workshop to synthesise the self-regulation learning; and participants completed a questionnaire to summarise their understanding of self-regulation and request the content and mode of future PL. Invitations to be videoed were communicated verbally and in writing followed by self-nomination to participate. This collaborative approach prioritised participant agency and collaboration across all iterations of this research.

Iterations

DBR is iterative in nature. This research had three iterations, each 10 weeks in duration. Each iteration included PL on self-regulation, an invitation to be videoed with a follow up learning conversation, and a group discussion and questionnaire to conclude the iteration. Between each iteration, adjustments and decisions about PL content and mode were made in collaboration with participants.

Mixed Methods

DBR typically uses a mixed methods approach to data collection (Anderson & Shattuck, 2012). This methodology enabled flexibility and responsiveness in data collection methods. Data collection was predominantly qualitative. Data sources included video footage and audio data from volunteer video participants, semi-structured group discussions, and self-

administered semi-structured questionnaires. Audio recordings were professionally transcribed, then checked for accuracy against the audio files and analysed following the six phases of thematic analysis described by Braun and Clarke (2006). Inductive analysis across multiple sources of data allowed for the corroboration and extension of extracted patterns and themes (Cohen et al., 2011). Examples of themes within the data included the intense stress participants experienced within their work context, the importance of relationships (with the person videoing and with the PL material) and, for those engaged in being videoed, the value of this experience for professional reflection.

The analysis of data from each iteration, engagement with the literature, and collaboration with participants, served to inform and shape each subsequent iteration of research. Validation of analysis occurred through peer debriefing, conversations with participants, and review of thematic analysis against my own reflexive researcher journal notes. Previous iteration data analysis was also revisited as the data from the next iteration was analysed; each iteration created an additional layer affording deeper understanding across the research.

Video Data

Video footage and the learning conversation between researcher and participant adhered to a specific format adapted from the Video Intervention for Positive Parenting (VIPP) method (Juffer et al., 2008; Juffer et al., 2017), used in home and childcare settings (VIPP-CC) (Werner et al., 2018). My adaptations to VIPP accommodated contextual differences from these settings to school. The method's four key components were maintained; providing PL, videoing, reviewing to select examples of PL being applied, and facilitating the ensuing learning conversation. Aligning well with DBR, the VIPP method occurred in context, was collaborative, iterative, and structured around the application of learning -the PL intervention.

Key roles for VIPP include the videoed participant and the videographer/intervener. As the intervener, I provided PL, took video, reviewed footage, and led the learning conversation. This framework supported discussion of personalised contextual video examples linked to PL application within context. The iterative nature of the intervention allowed for continuous entry points into the video experience. Prior to each iteration, all participants were re-invited to be involved in this process. Those who had participated already could choose whether to continue; those who had not yet participated could opt in.

Storage and retrieval of video footage and annotations evolved across the iterations. Initially, no repository was used with video footage saved on a laptop and then shared in person through a learning conversation resulting in inefficiencies in time use. Fortunately, subsequent iterations benefited from TORSH Talent's offer to trial their platform for research purposes. Acknowledged by other researchers as an effective platform to capture and evaluate the complexities of teaching and learning (Hougan et al., 2018; Schroeder & Currin, 2019; Thomas et al., 2019), TORSH Talent enabled video footage to be uploaded, annotated by members of the research team, viewed synchronously and asynchronously, and shared between members. The affordances of this platform streamlined the process.

Group Discussions and Questionnaires

Each iteration concluded with semi-structured group discussions and questionnaires. Group discussions enabled open dialogue, collective sharing and reflection, problem solving,

and collaborative planning. My embedded involvement in the research also allowed my voice to be included. Discussions provided insights into participants' collective experience of the learning and application of self-regulation. Those who were videoed shared their experiences and learning with their colleagues, and the group raised site-specific challenges indicating PL themes for subsequent iterations.

Participants completed self-administered, semi-structured questionnaires which provided qualitative and quantitative data through a variety of item types. Four item types were used in the questionnaires: nominal scales (multiple choice questions and dichotomous questions); ordinal scales (rank order and rating scales); open-ended questions; and, in the final questionnaire only, contingency questions. Questionnaires evolved reflexively as the research progressed and were structured to capture growth in understanding and application of self-regulation while informing the scope and direction of future PL.

Focus on the Design and Testing of an Intervention and Evolution of Design Principles

The intervention for this research was PL on self-regulation with specific focus on Self-Reg Theory (Shanker, 2013; Shanker & Barker, 2016). Video revealed individual participants' contextual application of this learning. Follow-up video-based conversations enabled further reflection, connections, and learning to occur. Participants who chose not to be videoed took part in the PL at the beginning of the iteration and discussion and questionnaire at the end; however, they did not have a structured revisiting of this learning in the middle, in contrast to their video participant counterparts.

The overall outcome of DBR is to evolve a set of design principles. For this research, these centred on principles for effective PL. By spotlighting the use of video in PL, design principles could be modified as the enabling and constraining elements of video use were extracted from the data. This evolutionary approach supported the detection of specific factors, suggesting possible explanations for an increase in willingness for teachers to be videoed and further informing the literature about video use in PL.

Findings and Discussion

Hollingsworth (2005) suggested "the most pertinent challenge associated with the use of video in Australia relates to developing a culture among teachers and teacher educators that values and embraces the collection and use of video data" (p. 151).This challenge, reported more than two decades previously, continued to be present in my research, where quantitative data evidenced initial low uptake. What was interesting to note; however, was the subsequent upward trend of teachers' willingness to be videoed as my research unfolded over three iterations (Fig. 1). Was this an example of the culture shift that Hollingsworth was suggesting in 2005? What was occurring that lead to this increasing trend? This prompted further investigation to ascertain the contributing factors affecting this increase, then recommendations to support similar trajectories for those aspiring to increase video use to support PL.

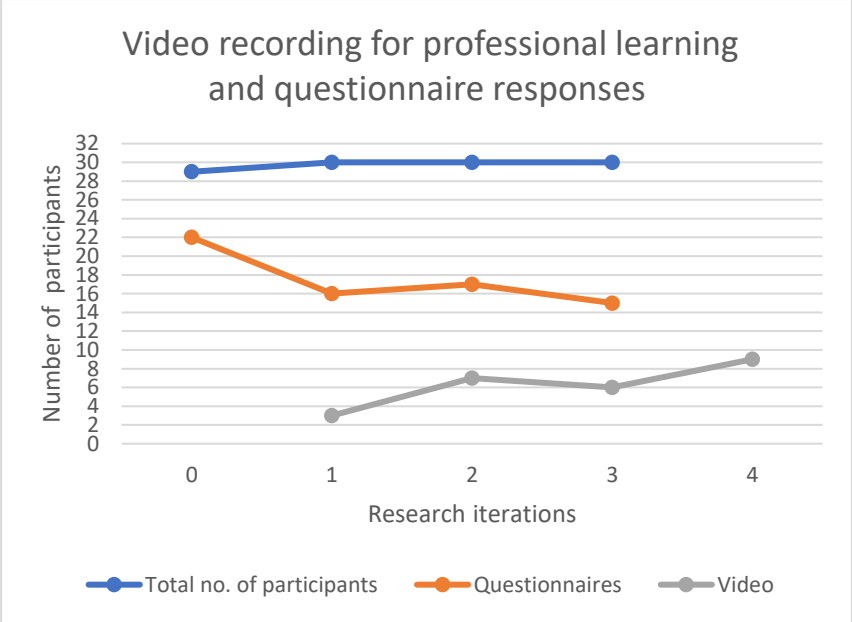

Figure 1: Video Recording for Professional Learning (VRPL) and responding to questionnaires

What inspired three teachers to opt to be videoed and what factors lead the increase to nine interested participants at the conclusion of the research? Data collection and analysis identified five promising factors with respect to increasing teachers' willingness to be videoed to enhance PL. By interpreting what was enabling and constraining participants to accept the invitation to be videoed as each iteration unfolded, enabling elements were promoted and constraining factors addressed. The five factors featured as catalysts to increase video willingness in teacher included: safety in relationships – the building of relational trust; personalised connection of PL to classroom practice; an effective video annotation repository; teacher agency within an iterative structure; and mitigating additional time demands on teachers by providing external supports.

Factor 1: Safety in Relationships – Building Relational Trust

One of the dominant findings from this research was the power of safe relationships. As noted in Figure 2, Thompson et al. (2020, p. 98) underpinned their Iterative Model of Professional Learning (IMPL) with trusting, professional relationships.

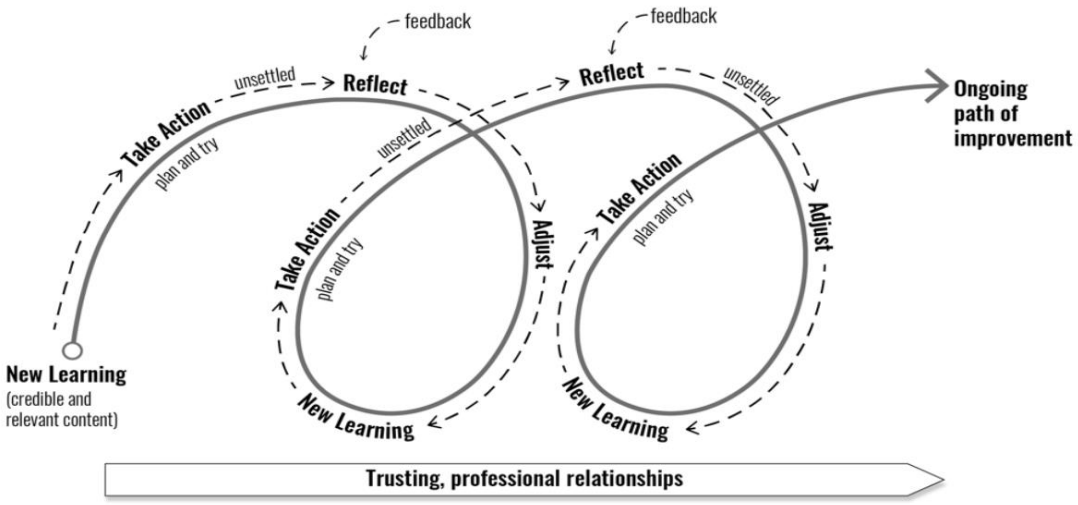

Figure 2: Thompson et al.'s (2020) Iterative Model of Professional Learning

Supporting these claims and further extending them by considering relationships beyond only those between people, this research confirmed that relationships mattered. Relationships with people were important for many participants, while a relationship with the learning material also motivated video participation. Participants who indicated that shyness, lack of confidence, nerves, and anxiety contributed to their avoidance of VRPL were reduced stress and promoted psychological safety (Higgins et al., 2012) by not engaging in being videoed. For these participants, being videoed was an additional stressor that increased tension and depleted energy (Shanker, 2020), and was therefore avoided.

Some participants felt self-conscious participating in VRPL, referencing their discomfort in seeing and hearing themselves. Teachers D and N commented negatively about their size/weight and Teachers A and G about how they sounded. Dickerson et al. (2007) reported similar participant discomfort regarding appearance and voice suggesting that for some, being videoed posed a threat to their self-esteem. To mitigate this threat, a climate of safety through relationships was prioritised; both my relationship with participants as well as the safety messaged by witnessing others' involvement in VRPL. By establishing and maintaining safe collegial relationships where trust, mutual respect, and recognition were present (Molla & Nolan, 2020), interpersonal trust and interactional trust (Edwards-Groves et al., 2016) resulted in relational trust. This relational trust fostered an increase in willingness to be videoed.

The evolution of partnerships between teachers and researchers (McLaughlin & Black-Hawkins, 2007; Swabey et al., 2021) and the power of co-learning between teachers have established literature bases (Avalos, 2011; Cramp & Khan, 2019; Prain et al., 2021). The specific relationships fostered and examined in this study were relationships between participants and the facilitator (both in general and specifically with me) (see Figure 3), and the participants' relationships with colleagues (again, in general and specifically with their own colleagues) (see Figure 3).

In the final questionnaire participants ranked perceived importance of these relationships. They also reflected specifically on their experience of these relationships during the PL. To begin with they considered relationships with presenters (Tab. 2).

What importance do you place on establishing and maintaining relationships will professional learning presenters in general?		I established and maintained an effective relationship with the presenter.	
Extremely important	4	Always	8
Very important	2	Mostly	4
Somewhat important	7	Sometimes	2
Not very important	0	Rarely	1*
Unimportant	2	Never	0

*Participant noted that they had missed many sessions

Table 2: Relationships with professional learning presenter(s)

I built relational trust by engaging with participants in PL workshops, team-teaching in classrooms, and through staffroom conversations. The more relational trust, the greater the willingness to be videoed. *Who* was videoing made a significant difference to some participants. In questionnaire 4, Teacher A commented, "If most people were to video me in the classroom it would make me very unsettled and nervous. Marie made me feel unjudged and calm about the experience;" and when contemplating being videoed again, "Yes, if Marie was doing the filming; others might make me nervous." Teacher F reflected, "Being videoed has been a fantastic experience. At first, I was stressed as I find this to be nerve-wracking, someone watching me and my practice. My thinking was 'what if I say /do the wrong thing'. But once I experienced the first one and received feedback from Marie – I was really amazed of what I was seeing and the comments that I received made me feel very reassured."

Collegial relationships were also considered broadly and specifically (Tab. 3).

What importance do you place on establishing and maintaining relationships will colleagues during PL?		I established and maintained relationships with colleagues throughout this PL	
Extremely important	8	Always	8
Very important	6	Mostly	6
Somewhat important	1	Sometimes	1
Not very important	0	Rarely	0
Unimportant	0	Never	0

Table 3: Relationships with colleagues

The final questionnaire also captured the feelings of Teacher H, "I felt left out initially. It seemed like only the 'in' group were involved [in videoing]", suggesting that relational trust needed strengthening.

Relationships connected to specific interests or roles within the school also featured. Teacher P, videoed each iteration stated, "I'm really interested in working with people who are doing interesting things." Teacher G saw volunteering to be videoed as an opportunity to be a role model: "I was initially nervous about doing this but felt it was important I showed staff how much I valued this process." Over the study, participants' interest in viewing colleagues' videos grew as did their comfort with sharing personal video footage with others, suggesting the deepening of relational trust and perceived safety.

One participant justified how their willingness to be videoed was due to interest in the learning material rather than the person providing to PL or videoing. Additionally, the relationship video participants developed with their own teaching practice when engaging in video that connected PL to their teaching practices strengthened. This lead to my adaptation of the IMPL proposed by Thompson et al. (2020) (Fig. 3). The adapted IMPL shows a variety of potential relationships underpinning iterative PL that hold promise in further understanding factors that may support teacher engagement in being videoed as part of their professional growth.

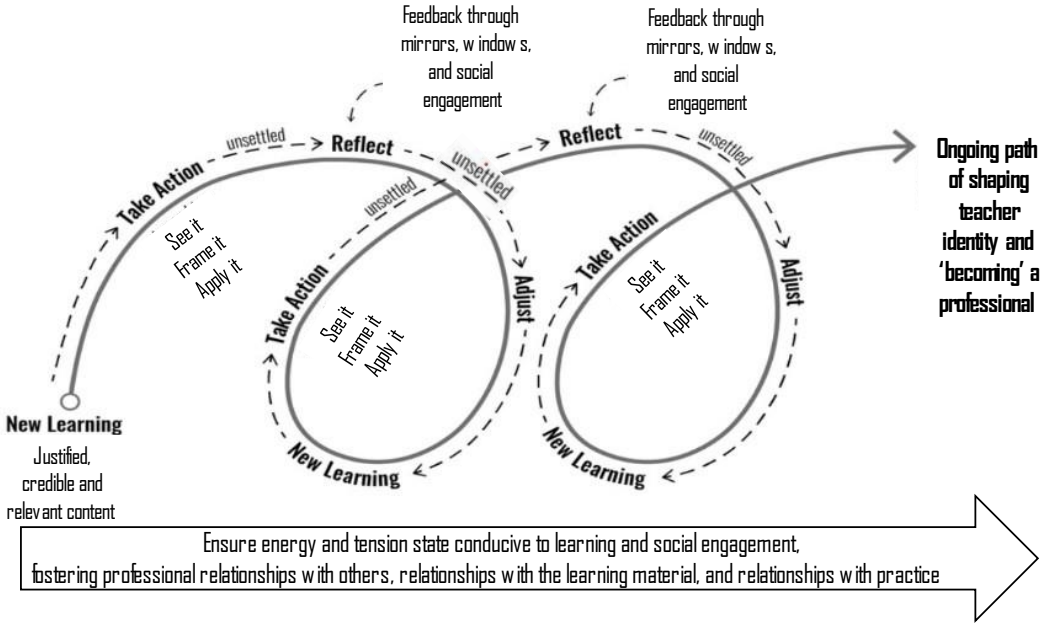

Figure 3: Adapted Iterative Model of Professional Learning

Factor 2: Personalised Connection of Professional Learning to Classroom Practice

Participants reported how the video learning conversations afforded personalised learning and deepened reflection and connection between PL and personal practice. This reflected the findings of Marsh and Mitchell (2014) that suggested teachers involved in asynchronous video viewing of their own or colleagues' practice had great potential to effectively link theory and practice. Further claims of the affordances of multiple video viewings, either independently or collaboratively were also noted as valued characteristics in this research.

Personalised connection of PL to classroom practice occurred in three ways for video participants and extended to the broader group in the final iteration. Prior to the learning conversation, I reviewed participants' video footage to pre-select clips demonstrating successful application of PL. Second, the participant could self-identify further examples of PL application. Third, the experience of collaborative viewing enabled further personalisation, providing opportunities to pause or review footage, ask questions, reflect, clarify, and extend learning. Finally, in the third iteration, non-video participants showed interest in viewing their colleagues' videos. Videoed teachers shared their videos in small groups extending the learning for both participant groups through rich dialogue.

Participants highlighted how the pre-selected clips supported their connection of PL to their own practice. Teacher P shared, "Watching the video of myself teach and being shown how I create moments to re-energise and self-regulate [supported my connection to PL]." Teacher A noted that growth in understanding and application was occurring stating this happened by, "having Marie explain ways that I am self-regulating while teaching. Many of these I didn't know that's what I was doing. [I learnt this] from watching the video." Furthermore, Teacher F noted, "in the past 12 months, my growth of knowledge around self-regulation during teaching and learning [was surprising and occurred by] being made aware of possible times I may be doing this through filming with Marie."

Video also enabled participants to self-identify where, when, and how they were connecting PL to their practice. Referred to by Marsh and Mitchell (2014, p. 408) as "developing noticing", participants increased awareness on their own self-regulation and student-teacher relationships. "I found this experience very valuable as it is a visual representation of what the teacher is experiencing throughout his/her lesson when delivering it to the students. Watching the video made me aware when Self-Reg was applied and what strategies were used" (Teacher F, Questionnaire 4). Teacher D noted, "I'm watching this, and I know exactly when I'm applying Self-Reg skills or not." Opportunities for reflection were valuable. Teacher D shared, "I was able to reflect when we watched the video about how [one student] was reacting and how I was sort of reacting to [that student], which was nice to sort of see the relationship between [that student] and I at that stage and how I was able to help her regulate and at the same time I'm regulating myself."

Questionnaire 4 prompted participants to consider their engagement in a range of PL modes (workshops, books, courses, and more). They were then asked to and indicate of the perceived effect these modes had on their personal practice (Fig. 4). Video (and subsequent video- related conversations) was the only mode that consistently received the highest rating for effect on practice for the six participants who had engaged in this mode PL.

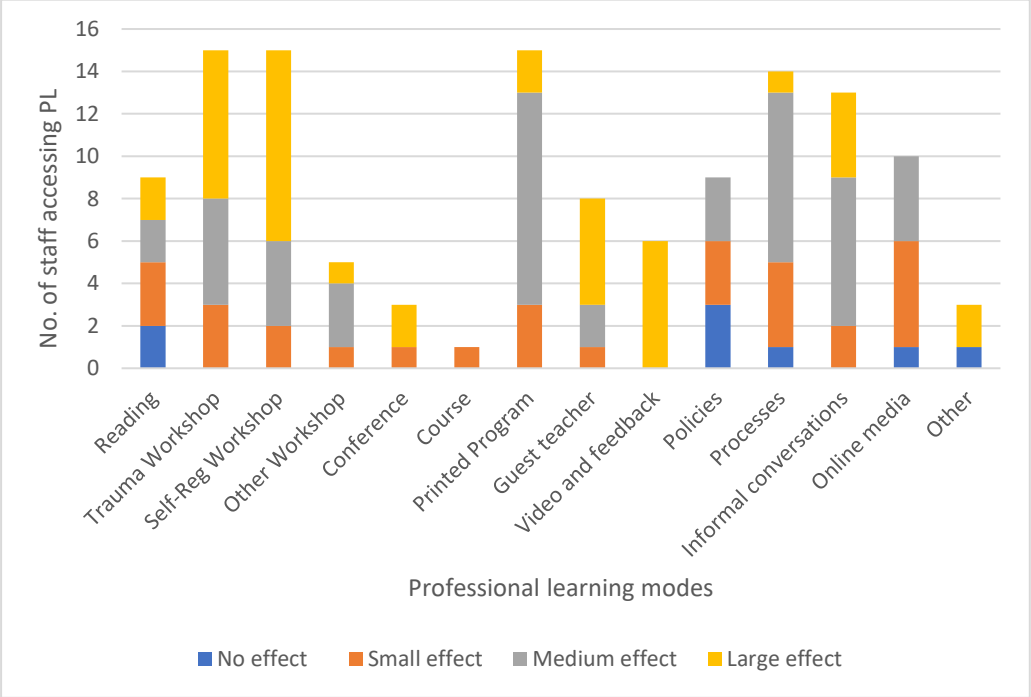

Figure 4: Perceived Effect of Self-regulation Professional Learning on Teaching Practice

Curiosity to view others' videos grew over course of the research. Initially, only Teacher P consented, "Happy to share video with staff so long as the reason is made very explicit." The second questionnaire captured Teacher E's interest in seeing others' videos: "It would be great to see some videos during PL time show-casing self-regulation strategies in action." Data from the third questionnaire indicated six participants' interest. Requests included opportunities to annotate videos collaboratively, see others' annotations and strategies, watch others and see what they were doing to self-regulate. In the final PL session, four participants shared and collaboratively annotated their videos in small groups.

Questionnaire data captured the experience of collaboratively annotating videos. Responses from those who shared their video ranged from acknowledging some discomfort, "I'd say it was fine but I'm not too excited about others watching a video of me teaching"

(Teacher A), to seeing it as an opportunity to extend learning, "It was great to be able to watch with a peer and have them pick up things I didn't notice" (Teacher G). Participants who watched another's video, were consistently positive, commenting: "I really enjoyed watching the way colleagues worked in their areas of expertise applying these techniques and this helped me apply some of the strategies I saw" (Teacher B); "Was good to see someone using similar strategies I was using in the classroom and responses from the children were similar across grade" (Teacher C); "It was good to see examples of Self-Reg. Being able to discuss with colleagues when students were self-regulating also pointed out new examples to me" Teacher E.

These various examples of personalisation within participants' learning through the use of video were also represented in the my adaptations to the IMPL (Thompson et al., 2020) depicted in Figure 3. Noted in the figure are the windows and mirrors afforded by video as well as the learning fostered through social engagement in video learning conversations with others. The adapted model also includes the moments where participants "see" the learning, "frame" the learning, and "apply" the learning, as they put the learning into action.

Factor 3: An Effective Video Annotation Repository

The rapid growth and availability of technology and purpose specific platforms advancing effective repository systems for streamlining PL video collection, storage, and interactivity has positive implications for video use in PL (Hollingsworth, 2005). Research conducted on video annotation software also indicated its potential to promote deeper learning (Ardley & Johnson, 2019; Rich & Hannafin, 2009). Video annotation improved with the introduction of software that served as a repository for video and researcher and participant annotations. Analysis of the data revealed the participants' positive experiences using TORSH and it generated curiosity within others. During the second staff meeting, one participant advocated, "I think that this is such an excellent platform for teachers. I couldn't recommend it highly enough," explaining that it afforded collaborative conversations with visuals to support reflection.

As a researcher TORSH allowed me insight into participants' thoughts and decisions, not otherwise evident through observation. By reading participant annotations of the thinking behind their actions, I gained insights into these silent processes and was further able to connect their PL to their practice. TORSH also gave me the capacity to annotate a video for Teacher G who could not meet in person. Teacher G explained, "Despite not sitting down with Marie to review the video it was fantastic to be able to use TORSH to do so. Reading and responding to comments made me more self-aware." My research confirmed Ardley and Johnson's (2019) claims of the feasibility and effectiveness of using video annotation technology. TORSH provided an effective platform affording deeper personalised PL, in addition to sparking curiosity in other participants, resulting in an increased teacher willingness to be videoed.

Factor 4: Teacher Agency Within an Iterative Structure

The iterative nature of DBR and the VIPP method created regular entry and exit points for participants. Aligning with Thompson et al.'s IMPL (2020), these iterations provided opportunities for participant agency. Participants were able to opt in and out to meet their needs (Tab. 4). Teacher agency, demonstrated through teachers' autonomy and voice

(Molla & Nolan, 2020), in addition to multiple iterations (Thompson et al., 2020) was another factor responsible for an increase in willingness to be videoed.

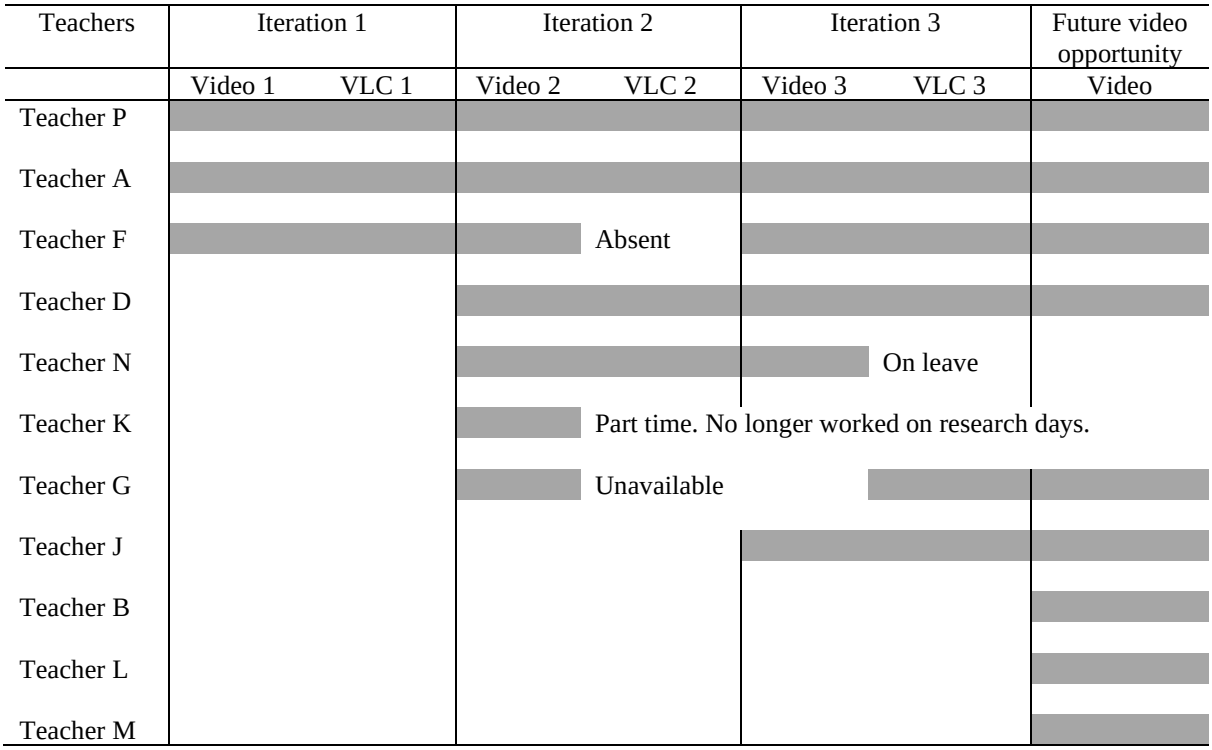

Table 4: Teacher participation in video and video learning conversations (VLC)

Regular invitations to engage in VRPL created multiple entry points for research participants. Those who had experienced VRPL shared affordances and vulnerabilities, mistakes, their own as well as student responses to being filmed, and challenging teaching moments. Teacher F described her experience with her students (pseudonyms used) whilst being filmed, "I can't recall what triggered him, but then he went and got the stool and then set one stool on top of another stool with himself on top of it. Oh no! and it was all being filmed. And the next moment I went up because Sam was on stools and then Liam was quite hot because he was being filmed and he was running around with the, oh, it was a bit chaotic!" Teacher J described the surprising lack of dysregulated behaviour, "The experience of being videoed was not a new one for me so I felt that there was not stress coming into the lesson. What was slightly disappointing about the experience was that everything was eerily quiet during the filming time and I was able to Self-Reg by chatting casually with students as they were working. At no time was the time stressful."

Sharing real experiences often resulted in group laughter and connection. This had the effect of reducing anxieties about being videoed and prompted others to contemplate video participation in the next iteration. When asked in the final questionnaire about participating in being videoed in the future, Teacher M offered, "I think so. It would probably help me to understand better what I am doing to self-regulate and other strategies that I could use," whilst Teacher E shared, "Not at this stage – still building confidence," implying that there was a possibility in the future if confidence increased. The provision of multiple entry and exit points through an iterative approach gave teachers agency which appears to have led them to become more willingness to be videoed.

Molla and Nolan (2020) suggest that "professional learning that problematise practice and context of practice"(p. 67) promote various facets of teacher agency. My research gave evidence of Molla and Nolan's inquisitive agency, as teachers sought out learning

opportunities as each iteration unfolded, or in a small number of cases, stepped away from video participation to manage other stressors; deliberative agency, as they engaged reflexively on their beliefs and practices through video learning conversations; and responsive and moral agency through their commitment to ethical and moral actions "addressed educational disadvantage" (p. 67). Teacher agency across the iterations supported and increased teacher willingness to be videoed.

Factor 5: Time – The Need for External Support Systems

Time appeared in two ways in the data. As this research was conducted over 18 months, this longer duration of time was an enabler. The data evidenced how relationship building, teacher agency through options, the growth of curiosity and comfort in the process, and appropriate spacing of time within and across iterations were all supported by the extended duration of this research. Time was also noted as a constraint. Time stressors are highlighted in the literature as contributing factors to teacher stress (Kyriacou, 2001; Prilleltensky et al., 2016; Shirom et al., 2009). Participants in this research reported feeling "time poor" due to work expectations and demands.

Providing PL over in cycles/iterations and over an extended period of time is well supported in the literature as an effective characteristic of PL (Thompson et al., 2020; Timperley, 2008). Final questionnaire data reflected how the pacing and frequency of the PL and video applications cycles met their needs. Seven indicated the pacing and frequency always met their needs, five mostly, one sometimes and one rarely. Comments included, "[There were] not too many sessions per term" and "afterschool is tough. Having time off class to meet is fantastic." Responses in the first questionnaire indicated that PL needed to be within school hours, as there were "too many other school related time commitments already". The second questionnaire highlighted three factors making the application of PL challenging; intense stress, time, and demands. Responses to the final questionnaire continued to reference time as a challenging factor and indicated support systems that were appreciated, "having time off class to meet is fantastic." In the final round of learning conversations, Teacher G gave further evidence of time as a stressor, "I remember when you came and filmed me, I'd just rushed in from something. It's always that busyness, and in my role it's just bang, bang, bang, bang, bang, from one thing to another."

The sense of being time poor is commonly reported by teachers as a stressor associated with their work (Skaalvik & Skaalvik, 2017). It is another reported deterrent for using video as a PL tool (Dickerson et al., 2007). To increase teacher willingness to participate in being videoed, external support systems ensured no additional time to source and set up the equipment, upload videos, or use time outside work to view, annotate and reflect on the videos was demanded of teachers. Teachers could choose when to view and annotate videos on TORSH. Furthermore, scheduling for videoing and conversations was attended to by senior leaders allowing teachers to focus on teaching and learning and supporting their learners without the time-consuming aspects of using video infringing on this precious commodity.

Reach and Limitations

Collecting qualitative data gives insight into individuals' perspectives. Data for this research, like the majority of work cited in the literature in this paper, reflected smaller sample sizes than quantitative studies. Independently such sample sizes can produce

inconclusive results; however, as more of these smaller sample sizes inform our understanding of teachers' engagement with VRPL, patterns and themes can emerge. With data from eight video participants and 28 questionnaire participants, this study contributes to the collective data.

Pragmatic limitations of this research resulted from changes in staff attendance as data was collected within regular school hours. Although this supported participation in the research, it also resulted in inconsistent participation. Staff meeting times used for research purposes competed with other participant demands. Reasons for participant absence included critical incidents follow-up, family commitments, maternity leave, other PL obligations, part-time hours, or personal wellbeing (sheer exhaustion at the end of an intense school day). These absences disrupted continuity and affected potential longitudinal data. Additionally, challenges arose due to change in teaching staff. Some teachers involved in the project since the beginning left the school, and new teachers arrived with little understanding or connection to the ongoing PL. A way to address this in future research might be to continue videoing in the new context with participant permission. The TORSH platform would support this. The questionnaires elicited both qualitative and quantitative data; however, as the number of participants completing the questionnaires ranged from 15 to 22, quantitative data was only used to establish trends within the participant group.

Conclusion

Evidence in the literature underscores the affordances of video in PL (Hollingsworth, 2005; Major & Watson, 2018; Marsh & Mitchell, 2014; Zhang et al., 2011) making it desirable to increase teacher willingness to be videoed. My research adds to this rich body of literature pointing to the value of videos for teacher PL and supports past research (for example: Dickerson et al. (2007) confirming the mehrit of particular actions that make video a more appealing PL option to educators. The culmination of a DBR project commonly features an evolved set of design principles described as principles that, "detail the characteristics that are required of the features of an intervention and the conditions under which they must exist, in order to affect the desired outcome" (Crippen & Brown, 2018, p. 4). This paper suggests such characteristics and conditions and captures them in the five factors highlighted as well as in the adaptations made to Thompson et al.'s (2020) IMPL.

Results from the data revealed that encouraging teachers to opt into being videoed is supported when five factors are present. These factors include safe relationships; personalised learning that directly connects PL to practice; the application of an effective repository to store, annotate, and review video footage; teacher agency within an iterative approach; and, external support systems that act to remove additional demands on teachers' time. These factors are promising catalysts for increasing teacher willingness to engage with video.The research also suggests further exploration considering if it is essential for *all* teachers to engage in being videoed as a tool to deepen their professional learning? The findings from reported from my research add support to the literature providing examples of the experience of teachers who view videos of their colleagues, suggesting this has its own set of affordances (Kleinknecht & Schneider, 2013; Sherin & Han, 2004; Zhang et al., 2011), and contributes to growth in their PL. Data in this study revealed that viewing a colleagues' videoes may stimulate similar growth outcomes to those experienced by teachers who view and analyse their own teaching. If teacher agency is an essential characteristic, there may be teachers who will never be willing to be videoed suggesting that mandating their participation could lead to additional stressors. Further investigation into the different experiences of teachers viewing

of their own and others' videos is warranted to better understand the symbiotic relationship between these two experiences and how they might coexist to enrich PL for all.

In conclusion, this research led to the adaptation of Thompson et al.'s IMPL (2020) demonstrating a stretch beyond current literature. As shown in figure 5, a participant's energy and tension and capacity for social enagagement underpins iterative PL and involves relationships not only with people, but also relationships with learning material and relationships with professional practice. Video enables the mirrors and windows into our own, as well as others' practice, supporting the ability to 'see' the learning, 'frame' the learning, and 'apply' the learning and provides a rich artefact to engage in professional conversations linking learning to practice. This research suggests that increasing teacher willingness to be videoed may lead to more teachers benefitting from powerful PL experiences.

References

Anderson, T., & Shattuck, J. (2012). Design-based research: A decade of progress in education research? *Educational Researcher*, *41*(1), 16-25. https://doi.org/10.3102/0013189X11428813

Ardley, J., & Johnson, J. (2019). Video annotation software in teacher education: Researching university supervisor's perspective of a 21st-century technology. *Journal of Educational Technology Systems*, *47*(4), 479-499. https://doi.org/10.1177/0047239518812715

Australian Curriculum Assessment and Reporting Authority. (2019). *My School*. https://www.myschool.edu.au/

Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education*, *27*(1), 10-20. https://doi.org/10.1016/j.tate.2010.08.007

Borko, H., Jacobs, J., Eiteljorg, E., & Pittman, M. E. (2008). Video as a tool for fostering productive discussions in mathematics professional development. *Teaching and Teacher Education*, *24*(2), 417-436. https://doi.org/10.1016/j.tate.2006.11.012

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education*. Routledge.

Coles, A. (2013). Using video for professional development: The role of the discussion facilitator. *Journal of Mathematics Teacher Education*, *16*(3), 165-184. https://doi.org/10.1007/s10857-012-9225-0

Cramp, A., & Khan, S. (2019). The convivial space – exploring teacher learning through practitioner research. *Professional Development in Education*, *45*(3), 344-355. https://doi.org/10.1080/19415257.2018.1431957

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). SAGE.

Crippen, K., & Brown, J. (2018). Design-based research. In B. B. Frey (Ed.), *The SAGE encyclopedia of educational research, measurement, and evaluation* (pp. 490-493). SAGE.

Davey, R., & Ham, V. (2010). 'It's all about paying attention!' … but to what? The '6 Ms' of mentoring the professional learning of teacher educators. *Professional Development in Education*, *36*(1-2), 229-244. https://doi.org/10.1080/19415250903457158

Dickerson, D. L., Dawkins, K. R., Berry III, R. Q., & Pribesh, S. (2007). Secondary earth/environmental science teachers' aversion to videotaped self-study. *Journal of Geoscience Education*, *55*(5), 377-380. https://doi.org/10.5408/1089-9995-55.5.377

Dodgson, J. E. (2019). Reflexivity in qualitative research. *Journal of Human Lactation*, *35*(2), 220-222. https://doi.org/10.1177/0890334419830990

Edwards-Groves, C., Grootenboer, P., & Ronnerman, K. (2016). Facilitating a culture of relational trust in school-based action research: Recognising the role of middle leaders. *Educational Action Research*, *24*(3), 369-386. https://doi.org/10.1080/09650792.2015.1131175

Herrington, J., McKenney, S., Reeves, T., & Oliver, R. (2007). Design-based research and doctoral students: Guidelines for preparing a dissertation proposal. In *EdMedia+ Innovate Learning* (pp. 4089-4097). Association for the Advancement of Computing in Education (AACE).

Higgins, M., Ishimaru, A., Holcombe, R., & Fowler, A. (2012). Examining organizational learning in schools: The role of psychological safety, experimentation, and leadership that reinforces learning. *Journal of Educational Change*, *13*(1), 67-94. https://doi.org/10.1007/s10833-011-9167-9

Hollingsworth, H. (2005, August 7-9). *Learning about teaching and teaching about learning: Using video data for research and professional development* https://research.acer.edu.au/research_conference_2005/17

Hougan, E., Johnson, H., Novak, D., Foote, C., & Palmeri, A. (2018). Exploring the influence of accomplished teachers' video and commentary pairing on teacher candidates' noticing and thinking about practice. *Journal of Technology and Teacher Education*, *26*(2), 217-248.

Juffer, F., Bakermans-Kranenburg, M. J., & van Ijzendoorn, M. H. (2008). *Promoting positive parenting: An attachment-based intervention*. Taylor and Francis Group/ Lawrence Erlbaum Associates.

Juffer, F., Struis, E., Werner, C., & Bakermans-Kranenburg, M. J. (2017). Effective preventive interventions to support parents of young children: Illustrations from the Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline (VIPP-SD). *Journal of Prevention & Intervention in the Community*, *45*(3), 202-214. https://doi.org/10.1080/10852352.2016.1198128

Kleinknecht, M., & Schneider, J. (2013). What do teachers think and feel when analyzing videos of themselves and other teachers teaching? *Teaching and Teacher Education*, *33*, 13-23. https://doi.org/10.1016/j.tate.2013.02.002

Kyriacou, C. (2001). Teacher stress: Directions for future research. *Educational Review*, *53*(1), 27-35. https://doi.org/10.1080/00131910120033628

Major, L., & Watson, S. (2018). Using video to support in-service teacher professional development: the state of the field, limitations and possibilities. *Technology, Pedagogy and Education*, *27*(1), 49-68. https://doi.org/10.1080/1475939X.2017.1361469

Marsh, B., & Mitchell, N. (2014). The role of video in teacher professional development. *Teacher Development*, *18*(3), 403-417. https://doi.org/10.1080/1475939X.2017.1361469

McEwen, B. S. (1998). Stress, adaptation, and disease: Allostasis and allostatic load. *Annals of the New York Academy of Sciences*, *840*(1), 33-44. https://doi.org/10.1111/j.1749-6632.1998.tb09546.x

McLaughlin, C., & Black-Hawkins, K. (2007). School–university partnerships for educational research—distinctions, dilemmas and challenges. *The Curriculum Journal*, *18*(3), 327-341. https://doi.org/10.1080/09585170701589967

Molla, T., & Nolan, A. (2020). Teacher agency and professional practice. *Teachers and Teaching*, *26*(1), 67-87. https://doi.org/10.1080/13540602.2020.1740196

Ng, S. F. (2015). Going forward: Encouraging teachers to embrace video technology for self-development. In S. F. Ng (Ed.), *Cases of mathematics professional development in East Asian countries* (Vol. 10, pp. 249-250). Springer. https://doi.org/10.1007/978-981-287-405-4_15

Prain, V., Emery, S., Thomas, D., Lovejoy, V., Farrelly, C., Baxter, L., Blake, D., Deed, C., Edwards, M.-C., Fingland, D., Mooney, A., Muir, T., Swabey, K., Tytler, R., Workman, E., Daniel-Zitzlaff, T., & Henriksen, J. (2021). Team teaching in large spaces: three case studies framed by relational agency. *Teaching Education*, 1-15. https://doi.org/10.1080/10476210.2020.1868423

Prilleltensky, I., Neff, M., & Bessell, A. (2016). Teacher stress: What it is, why it's important, how it can be alleviated. *Theory Into Practice*, *55*(2), 104-111. https://doi.org/10.1080/00405841.2016.1148986

Rich, P. J., & Hannafin, M. (2009). Video annotation tools: Technologies to scaffold, structure, and transform teacher reflection. *Journal of Teacher Education*, *60*(1), 52-67. https://doi.org/10.1177/0022487108328486

Schroeder, S., & Currin, E. (2019). Syncing our cycles: An inquiry-based coaching model for distant supervision. *Journal of Practitioner Research*, *4*(1), 6-12. https://doi.org/10.5038/2379-9951.4.1.1098

Shanker, S. (2013). *Calm, alert, and learning: Classroom strategies for self-regulation*. Pearson.

Shanker, S. (2020). *Reframed: Self-Reg for a just society*. University of Toronto Press. https://doi.org/10.3138/9781487533816

Shanker, S., & Barker, T. (2016). *Self-Reg: How to help your child (and you) break the stress cycle and successfully engage with life*. Penguin Press.

Sherin, M. G., & Han, S. Y. (2004). Teacher learning in the context of a video club. *Teaching and Teacher Education*, *20*(2), 163-183. https://doi.org/10.1016/j.tate.2003.08.001

Shirom, A., Oliver, A., & Stein, E. (2009). Teachers' stressors and strains: A longitudinal study of their relationships. *International Journal of Stress Management*, *16*(4), 312-332. https://doi.org/10.1037/a0016842

Skaalvik, E. M., & Skaalvik, S. (2017). Dimensions of teacher burnout: Relations with potential stressors at school. *Social Psychology of Education*, *20*(4), 775-790. https://doi.org/10.1007/s11218-017-9391-0

Swabey, K., Muir, T., Thomas, D., Emery, S., & Edwards, M.-C. (2021). University and school research partnerships as a source of professional growth in regional communities. *The Australian Educational Researcher*, 1-17. https://doi.org/10.1007/s13384-021-00477-1

Thomas, J., Hicks, J., & Vannatter, D. (2019). What teachers express as professional development needs of beginning teachers: Voices from the profession. *The Hoosier Science Teacher*, *42*(1), 1-12. https://doi.org/10.14434/thst.v42i123848

Thompson, P. W., Kriewaldt, J. A., & Redman, C. (2020). Elaborating a model for teacher professional learning to sustain improvement in teaching practice. *Australian Journal of Teacher Education*, *45*(2). https://doi.org/10.14221/ajte.2020v45n2.5

Timperley, H. (2008). *Teacher professional learning and development*. International Academy of Education.

Werner, C. D., Vermeer, H. J., Linting, M., & Van Ijzendoorn, M. H. (2018). Video-feedback intervention in center-based child care: A randomized controlled trial. *Early Childhood Research Quarterly*, *42*, 93-104. https://doi.org/10.1016/j.ecresq.2017.07.005

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. https://doi.org/10.1016/j.tate.2010.09.015

Acknowledgements

I would like to acknowledge the Australian Research Council for funding this research and TORSH Talent for 10 TORSH video repository platform licenses. I would also like to acknowledge the teachers and teacher leaders at the research site who showed such interest in iterations of Self-Reg PL and learning through video.