Using video to support teachers’ reflective practice: A literature review

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Abstract: Given the effort invested in workplace professional development programs, professional learning, as it takes place in context, should be examined closely to help inform the design of training mechanisms that will truly contribute to professional development. In particular, given the interest and growth in the use of video for the development of reflective practice among professionals, it appears relevant to further examine video-based mechanisms. Teacher education constitutes a fertile ground in this regard. This article thus presents a literature review on the use of video for the professional development of teachers, particularly regarding their ability to reflect on their own teaching practices. To this end, 89 articles were analyzed to bring out the participants’ learning, in terms of both the learning process itself and its effects. Our findings show that video-based training mechanisms lead to significant learning, at least in the medium term, but that the collaborative dimension of learning could be further explored.

Subjects: Adult Education and Lifelong Learning; Teaching & Learning; Teachers & Teacher Education

Keywords: teacher education; video; literature review; reflective practice

1. Introduction

Teacher education has long been a fertile ground for the use of video for the purposes of training and evaluation. For example, video has been used to give university supervisors access to the classroom performance of teachers in training, without the supervisors needing to be present in...
the classroom. However, this method, which involves leaving a camera running in the classroom, has been criticized because it does not take into account the entire set of classroom interactions (van Es & Sherin, 2009). Indeed, the use of video in teacher education involves more than simply putting a camera in the classroom to evaluate the teaching skills or classroom performance of preservice teachers. In fact, training mechanisms involving video analysis have evolved a great deal since they were first introduced, among other things because of technological development and video annotation tools.

Tripp and Rich (2012a) review of studies on the use of video in teacher education showed that video enables preservice teachers to switch their focus from themselves and focus more on pupils and their learning. To this end, tasks involving some form of interaction (with a trainer and/or peers) were preferred by the participants, even though individual tasks were more frequently proposed by the trainers. However, Tripp and Rich’s review was limited to training mechanisms wherein the learners analyzed their own videos and thus does not provide a better understanding of how watching another teacher (a peer or unknown teacher) on video might contribute to the reflective practice of teachers. Similarly, the studies analyzed by Brunvand (2010) show that the use of video in teacher training makes it possible to analyze the same situation several times from different angles, something that direct observation does not allow. Using video can thus help develop better noticing skills among preservice teachers. Moreover, when the person appearing in the video is unknown, having access to his/her comments can contribute to a conceptual change among preservice teachers, something that is known to be difficult to achieve in initial teacher training (Guskey, 2002).

However, Brunvand’s (2010) literature review was not a systematic review. The systematic literature reviews conducted by Hixon and So (2009), Marsh and Mitchell (2014) and Gaudin and Chaliès (2015) all confirmed that video can effectively be used in teacher education with different aims, including developing the ability to reflect on one’s own teaching skills. These studies show that using video, by exposing preservice teachers to many different potential situations (and all their complexities) and engaging them in a collective analysis of these situations, can help promote deeper reflection. This deeper reflection notably leads to a better linkage between actions in the classroom and more general pedagogical principles or various perspectives. However, Hixon and So’s review (2009) was limited to initial teacher education.

Marsh and Mitchell (2014) review includes studies on continuing teacher education but, while it addresses the use of video to promote reflection, this was not its specific focus. Wang and Hartley’s review (2003), like the preceding reviews, also showed that using video in teacher education leads to changes in teachers’ beliefs (when they observe themselves) or helps them to engage in a reflective analytical process (when they observe both themselves and peers) or to model their practice on a desired practice (when they observe experts). However, their review concerned studies conducted more than ten years ago (1990–2003). Lastly, Gaudin and Chaliès (2015) systematic review more specifically addressed the nature of teacher’s activity as they view a classroom video, among other angles of analysis. They concluded that teachers’ video viewing activity features two main processes, namely, selective attention (ability to identify relevant classroom events within the complexity of the setting) and knowledge-based reasoning (ability to interpret what they have identified and imagine new mechanisms of action for the future).

However, most of the studies in their review focused on the goals and effects of video viewing. Whether in the context of teacher education or the professional development of in-service teachers, the use of video to reflect on teaching practices has been widely documented in academic literature. However, the learning process of the teachers involved in these training mechanisms, especially the reflective process, has received less attention than their effect. Thus, this study focuses on understanding the state of research on the use of video to support the development of reflective practice in initial and continuing teacher education.
Despite the advantages of using video in teacher education, relatively few literature reviews have been conducted to describe the state of knowledge on this subject. The research questions of this article are therefore to: 1) What was the design of studies that use videos to promote teacher reflection? 2) What were the findings regarding teachers’ learning when videos are used to promote reflection in terms of the learning process and its effect?

2. Methodology
To answer these research questions, we conducted a literature review involving a narrative empirical synthesis (Evidence for Policy and Practice Information EPPI-Center, 2010). According to the EPPI Center, “[t]his type of synthesis brings together the results of empirical research that are in a narrative form to provide an accessible overview of results from individual studies in structured narratives or summary tables.”

2.1. Identifying relevant body of data
The database search focused on the years 2004–2015 in order to take into account the latest technological developments, in particular, the transition to digital technology and the use of the Internet. We searched the two main education databases—ERIC (Education Resources Information Center) and Education Source. Only peer-reviewed articles were considered so as to describe the state of scientific knowledge on this subject (primary sources). Table 1 illustrates the combinations of the descriptive entries in each database. To ensure the reproducibility of our procedure, we only included articles obtained through the systematic review of the two databases using the entries mentioned above. This first phase of the literature review yielded 490 articles (280 from Education Source and 210 from ERIC).

2.2. Data reduction
First, 47 articles were removed from the initial 490 articles because they appeared in both databases (duplicates), thus reducing the number of articles to 443. Second, articles were excluded based on various criteria that made it impossible to answer the research questions. In some cases, these articles were excluded after reading the abstract. In other cases, the articles needed a more in-depth analysis before a decision could be made to either keep or exclude them from the body of data. Of the 443 articles that met the inclusion criteria, 354 were removed. Table 2 illustrates the steps involved in reducing the body of data.

2.3. Data analysis
The data collected from the body of articles were analyzed in detail to produce our narrative empirical synthesis. First, the review team divided up the articles and completed a first reading of the abstracts for a general mapping. Following this first reading, we refined our research questions and established general categories (1st level) deemed to be relevant for addressing these questions: description of the video-based training mechanism, participants, reflective tasks proposed to the participants, methodology, main results, and avenues for future research. For the second level of categorization, two methods were used. For the reflective tasks proposed to the participants, we coded based on the categories of tasks proposed by Tripp and Rich (2012a): coding, writing, editing and discussion. For all the other categories, a 2nd level coding was performed as the themes emerged. This coding took the form of a table of definitions that were negotiated between the authors and research assistant at formal bi-monthly meetings (Krippendorff, 2004). This table’s structure was revised by the authors several times during the analysis. Each of the articles was then systematically coded. The collected data were then broken up into units of meaning, i.e. segments containing a single idea. To avoid arbitrary selection bias, this first selection was carried out by a single author. Each of these units of meaning was then coded systematically as it emerged. The same article could thus contain more than one code. The first-coded units of meaning were then submitted to the other author and a research assistant for an inter-rater assessment with three progressive coders through the negotiation of meaning (Miles & Huberman, 1994).
3. Findings

The findings section focuses on the design of the studies that used the video to support teachers’ reflection and the results on teachers’ learning (process and effects of learning).

3.1. Design of the studies that used videos to promote teacher reflection

We first determined who the participants were in the video-supported training mechanisms used to nourish teacher reflection. Table 3 presents the distribution of studies based on the career stage of the participants and who is displayed in the video.

A large proportion of the reviewed studies focused on the use of video in initial teacher training. Given the great diversity of countries and initial training contexts involved in the reviewed studies, it was sometimes difficult to determine at what stage of the preservice teachers’ initial training video was used. Some preservice teachers were at the beginning of their initial training (Fadde & Sullivan, 2013; Pena & De Leon, 2011) while others were approaching the end of their initial training program (Maclean & White, 2007). A smaller number of studies focused on in-service teachers (28%). Some studies (6%) included both preservice and in-service teachers under a collaborative scheme based on community principles (Liu, 2012; Orland-Barak & Rachamim, 2009). When preservice teachers were involved in a video-based training mechanism to support their reflection, it was more often in the context of a formal course at the university (67.5%) than in a classroom practicum setting (32.5%). Also, there was a great variety of “actors” in the videos used in the reviewed studies. The participants mainly viewed their own videos (49.5%), videos of unknown teachers (16.5%), videos of themselves and their peers (33%) and, to a lesser extent, videos of pupils only (less than 1%).
Moreover, the analysis of co-occurrences shows that, while for preservice teachers, the distribution of actors in the videos was quite varied (himself/herself, peers, pupils or another teacher), for in-service teachers, videos of themselves or their peers predominated (77.8% for the combined categories of “learner him/herself” and “learner and his/her peers”). To shed light on how the use of video can trigger a reflective process, knowing that the trigger must be meaningful to the learner, we then identified who chose the videos for analysis as part of the training mechanism. Unsurprisingly, the videos were chosen by the participants in 56.2% of the studies. In a smaller percentage, the researchers chose (37.1%), while in 5% of the studies, the researcher and the participant chose the video together.

To better understand the context in which video was used to foster reflection, we then identified the tasks proposed to the participants. The two most common tasks were participating in group discussions, conferences or interviews (44.4%) and writing down their reflections (39.3%). Editing a video (11.9%) or coding videos were proposed much less often (11.9% and 4.4%, respectively).

### 3.2. Findings on teachers’ learning when videos were used to sustain reflection

The analysis of the results obtained from the reviewed studies is presented in the following Table. Table 4 indicates the number of occurrences by category of results.

#### 3.2.1. The learning process

46.2% of the results reported in the studies described the learning process in the video-based training mechanism. The learning process was described by identifying the content on which the

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**Table 2. Steps involved in reducing the body of data sources**

| Steps | Description | No. of articles | Justification |
|-------|-------------|-----------------|---------------|
| 1     | Systematic search (Using EPPI-center standards) in ERIC and Education Source databases | 490 | Inclusion criteria such as 2004-2015 and peer-reviewed only were used to collect data. Descriptors linked to three themes: Teacher Education AND Reflection AND Video (see Table 1) |
| 2     | Removal of duplicate articles | – 47 | Duplicates in the two databases |
| 3     | Removal of irrelevant articles | – 354 | Exclusion criteria used: Not in teacher education (50) Reflection of pupils (31) Reflection of teacher educator (7) Technology other than video (84) Video as a means of movie production (5) Video used only for data collection (34) Reflection of participants not considered (44) Video or virtual games (6) Theoretical only (no empirical data) (74) Video used as a communication tool (16) Language other than English (3) |
| Total | | 89 articles (see full list—Appendix) | |
learners reflected (14.1%). For example, some studies demonstrated that the video-based training mechanism led to a change toward reflection that was more focused on the learner and learning rather than on the teacher him/herself or classroom management (Calandra, Brantley-Dias, Lee, & Fox, 2009; Napper-Owen & McCallister, 2005; Rosaen et al., 2010c; Santagata, Zannoni, & Stigler, 2007; Stockero, 2008). Other studies showed opposite results, revealing that the participants’ concerns remained focused on themselves and on behaviour management despite the video-based mechanism (Calandra et al., 2009; Calandra, Gurvitch, & Lund, 2008; McFadden, Ellis, Anwar, & Roehrig, 2013; Seung, Park, & Jung, 2014).

Another aspect of the learning process that was described (9.8%) related to the foundations of reflection: was the reflection based on facts or specific observations stemming from the video, or rather on recollections or generalities? For example, Grant and Kline (2010) concluded that the use of video appeared to have helped the discussion between participants evolve beyond generalities and recollections of practice. Reflection stemming from the analysis of a video thus appeared to be better grounded and better supported than reflection based solely on recollections (videos of the learner him/herself) or a written case study (videos of other teachers or pupils). These results are consistent with those reported in several of the studies analyzed (Bower, Cavanagh, Moloney, & Dao, 2011; Grant & Kline, 2010; Orland-Barak & Rachamim, 2009; Rich & Hannafin, 2009; Robinson & Kelley, 2007a; Santagata & Yeh, 2013; Sewall, 2009; Welsch & Devlin, 2007a).
Other results dealt with the nature or role of interactions (7.3%) in the mechanisms involving the use of video to develop collaborative reflection. These studies indicated that interactions with a facilitator or peers helped enhance the quality of the reflection implemented (Harford & MacRuairc, 2008; Rosaen et al., 2010b; Sewall, 2009), in particular, when it came to collective learning (Li, 2012). Interactions relating to the video also appeared to foster the development of a community (Borko, Jacobs, Eiteljorg, & Pittman, 2008) or participants’ awareness and noticing skills (Charteris & Smardon, 2013).

A number of results related to the learners’ capacity to implement an autonomous reflective practice (6.4%). This was often linked to the need to be prompted by the trainer to achieve the learning goals and the relation of these prompts on the reflection deployed by the participants. For example, while some studies demonstrated that it was not necessary to “prompt” participants in order to support reflective practice (Bayat, 2010; Danielowich, 2013; Pena & De León, 2011), other studies demonstrated that participants’ reflective practice benefitted from the scaffolding provided (Arya, Christ, & Chiu, 2013a; Blomberg, Sherin, Renkl, Glogger, & Seidel, 2013; Kohen & Kramarski, 2012; Rich & Hannafin, 2009). Moreover, Deaton’s research (2012) showed that, when these prompts were integrated into a platform rather than verbally formulated (e.g., to guide a written reflection), participants did not always systematically answer the questions asked.

Other results pertainning to the video-associated reflective process related to the difficulties encountered (4.9%) by the participants and trainers. These difficulties were sometimes technical in nature, in particular, when the required task involved editing a video, integrating videos into an electronic platform or connecting with a virtual environment (Li, 2012). Another difficulty cited was that participants sometimes felt that the object of the group discussion was too far removed from their concerns (Danielowich, 2013) or that the required reflective exercise (e.g., completing an e-portfolio) was too far removed from their real practice (in-service teachers) (Shepherd & Hannafin, 2008). In other cases, participants had difficulties appropriating the prescribed theoretical framework for reflective practice (Go, Lin, & Ying, 2008), or exercising their noticing skills (Tan & Towndrow, 2009). One explanation could be that the participants did not always have the necessary inquiry features to perform the required task (Seung et al., 2014). For others, the very fact of being videotaped and seeing themselves on screen made them nervous (Fadde, Aud, & Gilbert, 2009). Thus, some authors found that preservice teachers could be reluctant to hold their teaching up to reflective scrutiny, even in the university context as opposed to in a school (Amobi, 2005). Lastly, for some participants, commenting on videos in a blog, even in a collaborative manner, was seen as an essentially academic process, in which participants felt obliged to answer in a “politically correct” manner since this was also an evaluation situation (Tan, Tan, & Wettasinghe, 2011). Moreover, some participants questioned the relevance of the mechanism over the longer term for continuing their reflection once they actually began teaching (Shepherd & Hannafin, 2008).

Finally, some results related to the learning strategies deployed by the participants (3%), namely, the capacity for sense-making while watching a video (Colestock & Sherin, 2009), bringing to light reasoning patterns and decision making among the participants (Rich & Hannafin, 2008b) or how preservice teachers construct substantive analyses (Chung & van Es, 2014).

3.2.2. The effects of the learning process
53.8% of the results related to the effects of the use of video on the participants’ reflection. Several results dealt with the progression of the participants’ reflection over time (12%). Thus, following video analysis, the participants often demonstrated a greater capacity to deepen their reflections on teaching (Borko et al., 2008; Chung & van Es, 2014; Kuter, Gazi, & Aksal, 2012; Nelson, 2008; Snoeyink, 2010; Yerrick, Ross, & Malebash, 2005), in particular by distancing themselves from the purely technical aspects of their profession (Harford, MacRuairic, & McCartan, 2010), focusing on learning and interactions with pupils (Rich & Hannafin, 2008a; Rosaen et al., 2010b) or developing their capacity to observe (Star & Strickland, 2008) and analyze their teaching (Santagata et al., 2007). Some more specific studies demonstrated that the participants’ level of analysis improved
over time or between different theoretical frameworks (Deaton, 2012; Guo, 2010; Kohen & Kramarski, 2012; Kwon & Orrill, 2007; Vesterinen, Toom, & Krokfors, 2014) with regard to all three dimensions of inquiry, namely, being present in the experience, analyzing the experience and identifying and/or experimenting with alternative courses of action (Smith, 2005), or regarding their capacity to critique their colleagues (Eroz-Tuga, 2012). An improvement in the capacity to self-criticize was also noted by Fadde et al. (2009). However, some studies demonstrated that the progress made was not as extensive as expected because, among other things, the participants were too focused on the technical aspects of the profession or too centred on themselves (Calandra et al., 2008). The results on the participants’ progression were closely linked with several other categories since they were never alone.

Participating in video-based training mechanisms also led some participants to change their conception of good science teaching (Yung, Wong, Cheng, Hui, & Hodson, 2006) or effective mathematics teaching (Cho & Huang, 2014), effective classroom questioning (Grant & Kline, 2010; McCullagh, 2012) their beliefs about and representations of pupils (Cho & Huang, 2014; Nelson, 2008; Yerrick et al., 2005) or, more generally, the notion of effective teaching (Charteris & Smardon, 2013; Kucan, Palincsar, Khasnabis, & Chang, 2009; Robinson & Kelley, 2007a; Shepherd & Hannafin, 2008; West, Rich, Shepherd, Ressaco, & Hannafin, 2009).

Other results related to the level of reflection effectively reached by the participants (10.3%). Some studies found that the level of reflection reached by the participants essentially involved descriptive reflection (based on an existing or non-existing checklist) (Deaton, 2012; McFadden et al., 2013; Osipova, Prichard, Boardman, Kiely, & Carroll, 2011; Scott, Kucan, Correnti, & Miller, 2013) or comparative reflection, i.e. where the learner examined what he or she observed in the video from different viewpoints (e.g., the pupil’s viewpoint) or made the links between these observations and academic knowledge. However, several studies also reported critical levels of reflection, that is, through which the learner analyzed the foundations, values, ideologies and educational conceptions underlying the action presented in the video (Beyat, 2010; Borko et al., 2008; Calandra et al., 2009; Cherrington & Loveridge, 2014; Chung & van Es, 2014; Colasante, 2011; Guo, 2010; Harford & MacRuaic, 2008; Kohen & Kramarski, 2012; Nelson, 2008; Sewall, 2009; Vesterinen et al., 2014). Other results demonstrated that it is possible to improve the level of reflection reached by using video, but that this takes time (Blomberg et al., 2013; Stockero, 2008).

Participating in video-based training mechanisms also led to changes in teaching practice. Of the 20 articles which were coded “change in practices,” 11 (55%) referred to a reported change in practice, 8 (40%) referred to an observed change in practice, and one referred to both of these categories. Many authors concluded that watching videos alone or in a group improved classroom teaching (Breyfogle, 2005; Harford & MacRuaic, 2008; Ho & Tan, 2013; Osipova et al., 2011; Tripp & Rich, 2012b), in particular, because it allowed teachers to mobilize the critical learning realized in other situations (Gun, 2010), by effectively supporting student thinking and classroom interactions (Grant & Kline, 2010; Harlin, 2014; Rich & Hannafin, 2008a; Stockero, 2008; Tan & Towndrow, 2009), modifying the teaching approach (Thomas & Monroe, 2006), increasing self-confidence in oral skills (Cavanagh, Bower, Moloney, & Sweller, 2014), or enhancing the role of students and their speaking time in the classroom (Brown & Kennedy, 2011).

Other changes related to noticing skills (6.8%), i.e. the capacity of the participants to observe and identify what was important in a classroom situation, to link these observations with more general principles, and use these observations to better analyze the situation, as previously described by van Es and Sherin (2002). Thus, according to some studies, participants who watched videos showed an improved capacity to notice what was going on in the classroom (Napper-Owen & McCallister, 2005; Star & Strickland, 2008), in particular with regard to student learning (Eroz-Tuga, 2012; Kuter et al., 2012; Kwon & Orrill, 2007). Enhanced noticing skills appeared to translate into a greater awareness among participants of how effective their teaching methods were (Bower
et al., 2011; Cavanagh et al., 2014), alternative teaching methods to those they used (Welsch & Devlin, 2007a; Yung et al., 2006) or, more generally, their strengths and limitations, thus constituting a condition that was conducive to their professional development (Kuter et al., 2012; Snoeyink, 2010).

Lastly, a number of studies (6% of units) reported positive effects relating to the participants’ satisfaction. Thus, the results demonstrated that the participants preferred using video over memory-based reflection (Welsch & Devlin, 2007a) because they considered it to be a meaningful and beneficial learning experience for them (Amobi, 2005; Collins, Cook-Cottone, Robinson, & Sullivan, 2004). Their satisfaction was even greater when the experience was collaboratively shared with peers (Rickard, McAvinia, & Quirke-Bolt, 2009) and when they received feedback (Colasante, 2011; Wu & Kao, 2008). Some participants reported that they were nervous during the process (Fadde et al., 2009) or somewhat reluctant to use the technology (Rickard et al., 2009). Nevertheless, the results showed a decrease in communication anxiety and an increase in confidence (Bower et al., 2011), and a strong belief in the potential of video (Robinson & Kelley, 2007a; Snoeyink, 2010) and the construction of a professional identity (Koc, 2011).

3.3. Discussion and avenues for future research

Based on the analysis of the selected articles, four main findings can be formulated.

3.4. Studies are mainly in initial training in theoretical courses

There appears to be a general consensus on the benefit of using video to develop reflection among teachers (Fuller & Manning, 1973; Tripp & Rich, 2012a). In 66% of the reviewed studies, the use of video to develop reflection was examined among preservice teachers, most often in mathematics or science. Participants questioned the relevance of the tool over the longer term for pursuing their reflection once they actually began teaching (Shepherd & Hannafin, 2008). However, teachers must continue to reflect on their teaching after their initial training. Indeed, reflection should become an integral part of their professional competence. And this, even if video-aided reflection opportunities decrease with entry into the career (Harford & MacRauric, 2008). The scarcity of studies addressing the use of these tools throughout their careers limits knowledge on the impact of using video on teachers’ reflective practice. This appears to present an avenue for future research.

3.5. Participants most often analyzed their own practice and that of their peers

According to the literature on reflection, in order to trigger a reflective process, the situation analyzed must be significant for the learner—usually leading to an emotional as well as a cognitive reaction (Jay & Johnson, 2002; Rogers, 2002; Schön, 1983). Indeed, in 82.5% of the documented mechanisms, the participants analyzed videos presenting their own practice and/or their peers’ practice, and, in almost all cases, the participants were allowed to choose the situation to be examined and the angle of analysis, which appears to be consistent with what is known about the reflective process. This nevertheless means that 17.5% of the training mechanisms were based on the analysis of videos of other people (unknown teachers, pupils). When this was the case, the participants could rarely choose the object of analysis. In fact, in 37.1% of the reviewed studies, the trainer, rather than the participant, chose the video to be analyzed. Yet, the reviewed studies indicated that watching a peer’s video rather than one’s own did not foster the same kind of reflection (see for example Rosaen et al., 2010b) and that this reflection was less nuanced (for example in Yerrick et al., 2005). Nevertheless, using videos of other teachers might be more appropriate for preservice teachers, especially in the beginning of their education, since situations drawn from their own practice are more difficult to find (Yung et al., 2006). Comparing the content and level of reflection deployed when using videos of oneself, one’s peers or strangers should continue to be the subject of future research.

3.6. Several training mechanisms still favoured an essentially individual task

It should be noted that, according to many authors, the possibility of interaction is a determining condition for inducing reflection (Butke, 2006; Mann, Gordon, & Macleod, 2009; Rodgers, 2002; Hamel & Viau-Guay, Cogent Education (2019), 6: 1673689 https://doi.org/10.1080/2331186X.2019.1673689
Teekman, 2000). Tripp and Rich’s meta-analysis (2012a) of the use of video to analyze one’s own teaching confirmed that video-based training mechanisms involving interaction were preferred by learners over individual processes (e.g., written work). This conclusion was confirmed by some authors’ reports that, when the task was individual or involved written work, the learners questioned the relevance or authenticity of the analytical task required of them or its potential transposition into their post-training practice (Rich & Hannafin, 2008c; Tan et al., 2011). Yet, in a considerable number of the reviewed studies, when watching videos of themselves, other teachers or pupils, learners used the tools on an individual basis, for example, performing written work or video editing.

In order to overcome the limitations of training mechanisms involving individual and written work, several of the reviewed studies contained a collaborative mechanism favouring interaction between peers or with a trainer. These interactions were sometimes part of the object of study (see, for example, Arya et al., 2013a; Cherrington & Loveridge, 2014; Linares & Valls, 2009). However, several other studies did not examine these data (analyzing only the comments written by individual participants) (McFadden et al., 2013; Rosaen et al., 2010a). This led several authors to recommend that future research should focus specifically on the interactive dimension of the mechanisms: the nature of these interactions and the role of the trainer and peers in the development of reflective practice (Rosaen et al., 2010b; Santagata & Angelici, 2010)?

3.7. Training mechanisms helped participants reach a better supported, comparative and even critical level of reflection, and to focus more on learners and learning

Some of the reviewed results showed that the level of reflection reached by the participants most often involved descriptive or comparative reflection. In particular, the use of video appeared to lead some participants to shift their perspective, to some degree, onto pupils and the pupils’ learning (Yerrick et al., 2005) rather than focusing solely on themselves or behaviour management. However, there was no consensus on this finding and some studies showed the reverse to be true (Calandra et al., 2009, 2008). This could be explained by the nature of the training mechanism implemented, since the training mechanisms varied greatly from one study to another (in terms of the tasks proposed, the length of the task, the role of the trainer, etc.) Moreover, several studies also reported critical levels of reflection attained by learners (Bayat, 2010; Borko et al., 2008; Calandra et al., 2009; Cherrington & Loveridge, 2014; Chung & van Es, 2014; Colasante, 2011; Guo, 2010; Harford & MacRuairc, 2008; Kohen & Kramarski, 2012; Nelson, 2008; Sewall, 2009; Vesterinen et al., 2014). This finding is surprising given the literature on reflection, which shows that the critical level of reflection is difficult to reach (Lindsay & Mason, 2000; Mann et al., 2009; Wood & Bennett, 2000). This could be explained by the fact—well documented in several reviewed studies (e.g., that by Stockero, 2008)—that video-based training mechanisms appear to produce more grounded reflection. Similarly, the reviewed studies revealed that these levels of reflection cannot be reached solely by watching videos; several studies suggested that a more structured learning process (e.g., based on Dewey’s process of inquiry) is likely to better support reflection. Several studies underlined the importance of “prompts” by the trainer and their direct impact on the type of reflective discourse produced, for example, a more analytical discourse (Santagata & Angelici, 2010). These findings are consistent with those reported by Postholm (2008) and Tripp and Rich (2012b). However, despite the importance of the role played by the trainer, few reviewed studies (Arya et al., 2013a) specifically documented the trainer’s contribution to the mechanism. This appears to present an important avenue for research on training mechanisms aimed at developing reflection through the use of video.

4. Conclusion

Seeking to better understand the learning gained by the participants in training and professional development mechanisms using video, this article aimed to describe the state of knowledge on the use of video to develop teachers’ ability to reflect on their own teaching practices, in both initial and continuous training. The analysis of the 89 articles retained provided a picture of the design of these studies (training mechanisms and research methodology) and the results obtained, in terms of both the learning process itself and its effects. These findings indicated that video-based
mechanisms do indeed appear to help the participants meet their pedagogical goals. While diverse research methods are used to study the use of video to develop reflection among in-service teachers, studies involving preservice teachers make less use of individual or collective interview methods to document this learning from the point of view of the actors themselves. It would thus be relevant for future research to focus on the collaborative dimension of these training mechanisms and document them using a variety of methods, not only written material, so as to deepen our understanding of the benefits of using video to promote learning.

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References
Amobi, F. (2005). Preservice teachers’ reflectivity on the sequence and consequences of teaching actions in a microteaching experience. Teacher Education Quarterly, 32(1), 115–130.
Arya, P., Christ, T., & Chiu, M. M. (2013a). Facilitation and teacher behaviors: An analysis of literacy teachers’ video-case discussions. Journal of Teacher Education, 65(2), 111–127. doi:10.1177/0022013612458522
Boyat, M. (2010). Use of dialogue journals and video-recording in early childhood teacher education. Journal of Early Childhood Teacher Education, 31(2), 159–172. doi:10.1080/10901021003781247
Blomberg, G., Sherin, M. G., Renkl, A., Glogger, I., & Seidel, T. (2013). Understanding video as a tool for teacher education: Investigating instructional strategies to promote reflection. Instructional Science, 42(3), 443–463. doi:10.1007/s11251-013-9281-6
Borko, H., Jacobs, J., Eiteljorg, E., & Pittman, M.-E. (2005). Video as a tool for fostering productive discussions in mathematics professional development. Teaching & Teacher Education, 21(2), 417–426. doi:10.1016/j.tate.2006.11.012
Bower, M., Cavanagh, M., Moloney, R., & Doo, M. (2011). Developing communication competence using an online video reflection system: Pre-service teachers’ experiences. Asia-Pacific Journal of Teacher Education, 39(4), 311–326. doi:10.1080/1359866X.2011.614685
Breyfogle, L. (2005). Reflective states associated with creating inquiry-based mathematical discourse. Teachers and Teaching, 11(2), 151–167. doi:10.1080/13540600500283915
Brown, K., & Kennedy, H. (2011). Learning through conversation: Exploring and extending teacher and children’s involvement in classroom talk. School Psychology International, 32(4), 377–396. doi:10.1177/0134303411406813
Brunvand, S. (2010). Best practices for producing video content for teacher education. Contemporary Issues in Technology & Teacher Education, 10(2), 247–256.
Butke, M. A. (2006). Reflection on practice: A study of five choral educators’ reflective journeys. Update: Applications of Research in Music Education, 25(1), 57–69.
Calandro, B., Brantley-Dias, L., Lee, J. K., & Fox, D. L. (2009). Using video editing to cultivate novice teachers’ practice. Journal of Research on Technology in Education, 42(1), 73–94. doi:10.1080/15391523.2009.10782542
Calandro, B., Gurvitch, R., & Lund, J. (2008). An exploratory study of digital video editing as a tool for teacher preparation. Journal of Technology & Teacher Education, 16(2), 137–153.
Cavanagh, M., Bower, M., Moloney, R., & Sweller, N. (2014). The effect over time of a video-based reflection system on preservice teachers’ oral presentations. Australian Journal of Teacher Education, 39, 6. doi:10.14221/ajte.2014v39n6.3
Charteris, J., & Smordon, D. (2013). Second look – Second think: A fresh look at video to support dialogic feedback in peer coaching. Professional Development in Education, 39(2), 168–185. doi:10.1080/19415257.2012.753911
Cherrington, S., & Loveridge, J. (2014). Using video to promote early childhood teachers’ thinking and reflection. Teaching and Teacher Education, 41, 42–51. doi:10.1016/j.tate.2014.03.004
Cho, Y. H., & Huang, Y. (2014). Exploring the links between pre-service teachers’ beliefs and video-based reflection in wikis. Computers in Human Behavior, 35, 39–53. doi:10.1016/j.chb.2014.02.022
Chung, H., & van Es, E. (2014). Pre-service teachers’ use of tools to systematically analyze teaching and learning. Teachers & Teaching, 20(2), 113–135. doi:10.1080/13540602.2013.848567
Colasante, M. (2011). Using video annotation to reflect on and evaluate physical education pre-service teaching practice. Australasian Journal of Educational Technology, 27(1), 66–88. doi:10.14742/ajet.983
Colestock, A., & Sherin, M. (2009). Teachers’ sense-making strategies while watching video of mathematics instruction. Journal of Technology and Teacher Education, 17(1), 7–29.
Collins, J. L., Cook-Cottone, C. P., Robinson, J. S., & Sullivan, R. R. (2004). Technology and new directions in professional development: applications of digital video, peer review, and self-reflection. Journal of Educational Technology Systems, 33(2), 131–146. doi:10.2190/G9E9-LC01-H50X-4N23
Danielovich, R. (2013). Shifting the reflective focus: Encouraging student teacher learning in video-framed and peer-sharing contexts. Teachers and Teaching, 20(3), 264–288. doi:10.1080/13540602.2013.848522
Deaton, C. (2012). Examining the use of a reflection framework to guide teachers’ video analysis of their science teaching practice. Electronic Journal of Science Education, 16(2), 1–21.
EPPI-Centre. (2010). Evidence for policy and practice EPPI-centre methods for conducting systematic reviews. London: University of London.
Osipova, A., Prichard, B., Boardman, A. G., Kliki, M. T., & Carroll, P. E. (2011). Refocusing the lens: Enhancing elementary special education reading instruction through video self-reflection. Learning Disabilities Research & Practice, 26(3), 158–171. doi:10.1111/j.1540-5826.2011.00335.x

Peno, C., & De Leon, L. (2011). The use of digital video to foster reflective practice in teacher education. International Journal of Instructional Media, 38(2), 125–133.

Poschlom, M. (2009). Teachers developing practice: Reflection as key activity. Teaching and Teacher Education, 24(7), 1717–1728. doi:10.1016/j.tate.2008.02.024

Rich, P. J., & Hannafin, M. (2008a). Capturing and assessing evidence of student teacher inquiry: A case study. Teaching & Teacher Education, 24(6), 1435–1440. doi:10.1016/j.tate.2007.11.016

Rich, P. J., & Hannafin, M. (2008b). Decisions and reasons: Examining preservice teacher decision-making through video self-analysis. Journal of Computing in Higher Education, 21(1), 62–94. doi:10.1007/BF03023432

Rich, P. J., & Hannafin, M. (2008c). Video annotation tools: Technologies to scaffold, structure, and transform teacher reflection. Journal of Teacher Education, 60(1), 52–67. doi:10.1777/0022487108328486

Rich, P. J., & Hannafin, M. (2009). Scaffolding video self-analysis: Discrepancies between preservice teachers’ perceived and actual instructional decisions. Journal of Computing in Higher Education, 21(2), 128–145. doi:10.1016/j.s12528-009-0018-3

Rickard, A., McAvinia, C., & Quirke-Bolt, N. (2009). The challenge of change: Digital video analysis and constructivist teaching approaches on a one year pre-service teacher education program in Ireland. Journal of Technology & Teacher Education, 17(3), 349–367.

Robinson, L., & Kelley, B. (2007a). Developing reflective thought in preservice educators: Utilizing role-plays and digital video. Journal of Special Education Technology, 22(2), 31–44. doi:10.1777/016264340702200203

Rodgers, C. (2002). Defining reflection: Another look at John Dewey and reflective thinking. Teachers College Record, 104(4), 862–867.

Rosén, C. L., Lundeberg, M., Terpstra, M., Cooper, M., Fu, J., & Niu, R. (2010a). Seeing through a different lens: what do interns learn when they make video cases of their own teaching? Teacher Educator, 45(1), 1–22. doi:10.1080/08878730903386849

Rosén, C. L., Lundeberg, M., Terpstra, M., Cooper, M., Niu, R., & Fu, J. (2010b). Constructing video cases to help novices learn to facilitate discussions in science and English: How does subject matter matter? Teachers and Teaching: Theory and Practice, 16(4), 507–524. doi:10.1080/13540620100375405

San antrog, R., & Angelici, G. (2010). Studying the impact of the lesson analysis framework on preservice teachers’ abilities to reflect on videos of classroom teaching. Journal of Teacher Education, 61(4), 339–349. doi:10.1177/0022487110369555

San antrog, R., & Yeh, C. (2013). Learning to teach mathematics and to analyze teaching effectiveness: Evidence from a video- and practice-based approach. Journal of Mathematics Teacher Education, 17(6), 491–514. doi:10.1007/s10857-013-9263-2

San antrog, R., Zannoni, C., & Stigler, J. W. (2007). The role of lesson analysis in pre-service teacher education: An empirical investigation of teacher learning from a virtual video-based field experience. Journal of Mathematics Teacher Education, 10(2), 123–140. doi:10.1007/s10857-007-9029-9

Scott, D. A. (1993). The reflective practitioner: How professionals think in action. New York: Basic Books.

Scott, S., Kucan, L., Correnti, R., & Miller, L. A. (2013). Using video records to mediate teaching interns’ critical reflection. Journal of Technology and Teacher Education, 21(1), 119–145.

Seung, E., Park, S., & Jung, J. (2014). Exploring preservice elementary teachers’ understanding of the essential features of inquiry-based science teaching using evidence-based reflection. Research in Science Education, 44(4), 507–529. doi:10.1007/s11165-013-9390-x

Sewall, M. (2009). Transforming supervision: Using video elicitation to support preservice teacher-directed reflective conversations. Issues in Teacher Education, 18(2), 11–30.

Shepherd, C. E., & Hannafin, M. J. (2007a). Decisions and reasons: Examining preservice teacher decision-making through video self-analysis. Journal of Computing in Higher Education, 21(2), 128–145. doi:10.1016/j.s12528-009-0018-3

Shepherd, C. E., & Hannafin, M. J. (2007b). Examining preservice teacher inquiry: A case study. Teaching & Teacher Education, 24(6), 1435–1440. doi:10.1016/j.tate.2007.11.016

Smith, M. S. (2005). Helping preservice teachers develop habits of inquiry: Can it be done? Reading Research & Instruction, 45(1), 39–68. doi:10.1080/19388070509558441

Snoeyink, R. (2010). Using video self-analysis to improve the “withitness” of student teachers. Journal of Digital Learning in Teacher Education, 26(3), 101–110.

Star, J. R., & Strickland, S. K. (2008). Learning to observe: Using video to improve preservice mathematics teachers’ ability to notice. Journal of Mathematics Teacher Education, 11(2), 107–125. doi:10.1007/s10857-007-9063-7

Stockero, S. L. (2008). Differences in preservice mathematics teachers’ reflective abilities attributable to use of a video case curriculum. Journal of Technology & Teacher Education, 16(4), 483–509.

Tan, A.-L., Tang, C.-S., & Wettasinghe, M. (2011). Learning to be a science teacher: Reflections and lessons from video-based instruction. Australasian Journal of Educational Technology, 27(3), 446–462. doi:10.14742/ajet.954

Tan, A.-L., & Towndrow, P. A. (2009). Catalyzing student-teacher interactions and teacher learning in science practical formative assessment with digital video technology. Teaching and Teacher Education, 25(1), 61–67. doi:10.1016/j.tate.2008.07.007

Teekman, B. (2000). Exploring reflective thinking in nursing practice. Journal of Advanced Nursing, 31(5), 1125–1135. doi:10.1046/j.1365-2648.2000.01424.x

Thomas, J. A., & Monroe, E. E. (2006). The influence of video on a teacher’s journey toward standards-based mathematics teaching. Studying Teacher Education, 2(2), 169–181. doi:10.1080/17439580600983205

Tripp, T. R., & Rich, P. (2012a). Using video to analyze one’s own teaching. British Journal of Educational Technology, 43(4), 678–704. doi:10.1111/j.1467-8535.2011.01234.x

Tripp, T. R., & Rich, P. J. (2012b). The influence of video analysis on the process of teacher change. Teaching and Teacher Education, 28(5), 728–739. doi:10.1016/j.tate.2012.01.011

van Es, E. A., & Sherin, M. G. (2002). Scaffolding new teachers’ interpretations of classroom interactions. Journal of Technology & Teacher Education, 10(4), 571–596.

van Es, E. A., & Sherin, M. G. (2009). The influence of video clubs on teachers’ thinking and practice. Journal of Mathematics Teacher Education, 13(2), 155–176. doi:10.1007/s10857-009-9130-3
Vesterinen, O., Toom, A., & Krokfors, L. (2014). From action to understanding – Student teachers’ learning and practical reasoning during teaching practice. Reflective Practice, 15(5), 618–633. doi:10.1080/14623943.2014.900028

Wang, J., & Hartley, K. (2003). Video technology as a support for teacher education reform. Journal of Technology and Teacher Education, 11(1), 105–138.

Welsh, R. G., & Devlin, P. A. (2007a). Developing preservice teachers’ reflection: Examining the use of video. Action in Teacher Education, 28(4), 53–61. doi:10.1080/01626620.2007.10463429

West, R. E., Rich, P. J., Shepherd, C. E., Recesso, A., & Hannafin, M. J. (2009). Supporting induction teachers’ development using performance-based video evidence. Journal of Technology and Teacher Education, 17(3), 369–391.

Wood, E., & Bennett, N. (2000). Changing theories, changing practice: Exploring early childhood teachers’ professional learning. Teaching and Teacher Education, 16(5–6), 635–647. doi:10.1016/S0742-051X(00)00011-1

Wu, C., & Kao, H.-C. (2008). Streaming videos in peer assessment to support training pre-service teachers. Educational Technology & Society, 11(1), 45–55.

Yerrick, R., Ross, D., & Molebash, P. (2005). Too close for comfort: Real-time science teaching reflections via digital video editing. Journal of Science Teacher Education, 16(4), 351–375. doi:10.1007/s10972-005-1105-3

Yung, B. H. W., Wong, S. L., Cheng, M. W., Hui, C. S., & Hodson, D. (2006). Tracking pre-service teachers’ changing conceptions of good science teaching: The role of progressive reflection with the same video. Research in Science Education, 37(3), 239–259. doi:10.1007/s11165-006-9024-7