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Using a video app as a tool for reflective practice

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Structured abstract

Background: Videos have been shown to be beneficial in helping teachers reflect on their teaching practice and in contributing to their professional development, as they allow teachers and their mentors and colleagues to analyse teaching from different perspectives.

Purpose: This study investigated the perceptions and experiences of some student teachers and their supervisors who used a video application during one practicum period. Student teachers recorded each other's lessons with the video app, and supervisors oversaw student teachers online, via a portal. The study aimed to explore how far the app constituted a useful tool for student teachers' professional development and for the supervision of student teachers' practice.

Sample, design and method: The data were collected by gathering the experiences of 12 student teachers and 9 supervisors. Data included focus groups, interviews and video diaries. Analysis was undertaken using principles of content analysis and phenomenographic analysis such as thematising, coding and categorising.

Results: Findings suggested that student teachers in general felt that the video app supported their self-reflection. The influence on their professional development may have been limited by factors including lack of guidance for individual and collaborative reflection. Using the video app as a supervisory tool was regarded as challenging in some ways, particularly because video clips taken out of context were unable to capture the classroom's atmosphere, environment and culture.

Conclusions: The study highlights that video excerpts in themselves do not provide a sufficient basis for lesson observation. However, the study's results draw attention to the app's potential for guiding individual and collaborative video-based reflection. Consideration should be given to the changes that video-elicited reflection encourages with respect to supervision and its effects on the roles of supervisor and student teacher.

Keywords: teacher education; professional development; reflection; video-elicited reflection; supervision; video application

Introduction

Videos have become an increasingly popular resource in initial teacher education, mainly because of advances in technological developments and as mobile devices now allow teachers to shoot videos at any time (Goldman et al. 2007). The results of previous studies suggest that video-enhanced observation encourages an evaluation of one's own teaching and, thus, facilitates reflection about practice (Calandra et al. 2009; Coffey 2014; Shanahan and Tochelli 2014; Sherin and van Es 2005). Moreover, video-based reflection can lead to changes in one's teaching and the improvement of teaching practices in general, as videos help teachers to analyse their teaching from different perspectives (Rich and Hannafin 2008; Tripp and Rich 2012; van Es and Sherin 2010).

The use of video-analysis tools that enable editing, commenting and sharing of videos in teacher education is on the rise. Video itself has of course been utilised in education for a long time, but its use is now increasing, as the prominence of mobile phone and tablet apps facilitating ease of use. Further research is needed on this topic, as video-analysis tools are essential when promoting reflective thinking amongst teachers and student teachers. While drawbacks around the use of video have been noted - for example, technical issues and negative or self-conscious feelings that may arise when watching oneself on video (Bryan and Recesso 2006; Coffey 2014) - further exploration of the topic is needed to identify other possible obstacles.

Contributing to the existing literature, this study aims to discover student teachers' and supervisors' perceptions and experiences of the use of a mobile video analysis tool. Specifically, the application VEO (video enhanced observation) was used over a five-week practicum period. The study explores the potential of the video app to enhance student teachers' professional development, the viability of the video app in

supervising student teachers' practice, and student teachers' and supervisors' suggestions for the future role for the video app in teacher education.

The following research questions were explored:

- (1) How did student teachers use the app in their professional development?
- (2) How did the app work in the supervision of student teachers' practice?
- (3) How can the app be used in the future, as part of reflective practice?

Promoting teacher reflection and professional development through video

Reflection is a key element of a student teacher's professional development because, through reflection, educational theory can be integrated into teaching practice (Dewey 1933; Schön 1983; Zeichner and Liston 1987). In this article, reflective practice is defined as the process whereby student teachers reflect on their experiences individually and collaboratively with peers and supervisors to improve their professional practice (Dewey 1933; Schön 1983). Similarly, reflective activities are all those activities that aid and encourage reflection (Zeichner and Liston 1987). Some previous studies into reflective practice have suggested that reflective activities brought about some improvements in self-reflection, but that student teachers rarely reached a level of critical reflection in which they questioned their own teaching practices. Their levels of reflection remained as superficial and narrow at the end of the education programme as they had been at the start of the programme (Körkkö, Kyrö-Ämmälä, and Turunen 2016; McGarr and McCormack 2014). Educational literature suggests that reflection can develop when guiding frameworks or other people perceived as knowledgeable are involved (Calandra et al. 2009; Sewall 2009; Shanahan and Tochelli 2014). Without guidance for reflection, student teachers may otherwise concentrate on superficial aspects of their teaching (Bryan and Recesso 2006; Sewall 2009).

A variety of tools have been developed to foster reflection in teacher education. Video is one such tool and there are indications that it seems effective at promoting teacher reflection and professional development (Calandra et al. 2009; van Es and Sherin 2010) and improving teachers' ability to evaluate their own teaching and utilise reflection-in-action (Schön 1987). Video-enhanced observation may help teachers to identify contradictions between their beliefs about good teaching and their actual teaching practice (Bryan and Recesso 2006; Rich and Hannafin 2008). One advantage of video is that it can be viewed multiple times, which can help a teacher notice essential aspects of their teaching that they had not picked up on before (Rich and Hannafin 2008; Sherin and van Es 2005). In terms of perspective, video offers a different angle from which to view teaching (Coffey 2014; Snoeyink 2010). It can also shift the focus of reflection from teacher action and pedagogy to student learning and interaction (Snoeyink 2010; van Es and Sherin 2010). There are indications that video-elicited reflection can increase a teacher's motivation and engagement (Goldman et al. 2007) and result in more effective teaching behaviour (Shepherd and Hannafin 2008).

However, research has also identified some issues around the use of video, such as the occurrence of self-conscious negative critique or emotion in viewers that may prevent reflection (Coffey 2014; Shepherd and Hannafin 2008). Student teachers often pay undue attention to how they look and sound on video, missing opportunities for deeper reflection (Bryan and Recesso 2006; Snoeyink 2010), which highlights the importance of the role of supervisors as a guide to reflection. As video can reveal only one aspect of a classroom at a time, it can be difficult to make out facial expressions or pupils' voices, particularly when technical problems arise (Brophy 2004; Shepherd and Hannafin 2008). In order to help overcome some of the obstacles of video classroom observation, we decided to investigate the use of a mobile video application.

Methods

Ethical considerations

The study was approved by both the Faculty of Education and the Teacher Training School of the University of Lapland. All student teachers and supervisors participated in the study voluntarily, after signing written consent forms that set out information about the study, participant involvement, guarantees of anonymity and assurances that they could withdraw from the study at any time. Filming took place in the Teacher Training School of the University of Lapland. The duties of the school include teaching experiments and research. Therefore, consent for filming was not required from pupils, pupils' parents or school personnel when video recording was part of the student teachers' practicum assignments. In individual cases where parents had declined their kids being filmed, these children were not filmed at all. Student teachers were aware of their professional confidentiality and that the videos were supposed to be used only for the purpose of the practicum period. Participants' anonymity was ensured by stripping out all personal details and information from the data, and the participants are referred to by letters and numbers in the report on the research.

The context

The study was carried out within a primary school teacher education programme at the Faculty of Education, University of Lapland, during the autumn term of 2016, when student teachers were engaged in their final practicum period (known as the Advanced Practicum). This practicum period happens during the fifth year of study, either during the autumn or spring term. It runs for five weeks and aims to develop student teachers' ability to take overall responsibility for their pupils and classrooms and to adopt different pedagogical perspectives, with professional development and growth as a

special focus. Student teachers work in pairs in the same classroom and carry out teaching situations both alone and with a peer student. The student teachers are supervised by class teachers in Teacher Training School and by university lecturers and teachers from the faculty. In this article, 'supervision' should be understood to refer to the supervision of student teachers' practice during their final practicum period and is carried out by university lecturers and teachers from the Faculty of Education.

The video mobile application tool that we used in this study was VEO (Video Enhanced Observation). It is a mobile application that, in this instance, allows users to shoot videos of classroom practice and tag episodes of interest according to the focus of the observation. Instances can be rated as positive, negative or as provoking a question. Tags permit the easy review of key moments, as these can be retrieved without having to watch an entire video, and can be created by teachers according to their needs. After recording, videos can be uploaded to an online portal, where they can be commented on, tagged again and shared to promote dialogue. In addition, the application provides statistical information on the frequency of use of particular tags.

At the University of Lapland, this app has been in use since autumn 2016 with the aim of promoting student teachers' self-reflection and professional development, and developing supervision. The app is used as a tool to aid both individual and collaborative reflection in practicum periods.

Participants

The student participants were 12 student teachers who were engaged in the Advanced Practicum in the autumn term of 2016. Most of the student teachers were carrying out their practicum period in the Teacher Training School of the University of Lapland; a small number carried out their practicum period in other primary schools in Finland. Based on general knowledge of the student teachers, it can be assumed that they were of

different ages and had differing amounts of unqualified teaching experience outside of the teacher education programme.

Nine supervisors participated in the study. The supervisors had varying amounts of experience with supervising student teachers. Each supervisor oversaw one or two student teachers. When a supervisor guided two student teachers, the student teachers worked in pairs in the same classroom in the Teacher Training School.

Data collection

Before the programme started, the participants were given a short presentation about the app and its role in the research. After the presentation, the participants had time to put the app into practice. During the five-week practicum period, each student teacher had two teaching and two observation periods. Each period lasted one week. Student teachers who observed the classrooms made six videos with the app. They used three different tag sets: 'Communication', 'Classroom atmosphere' and 'Motivation and evaluation', each including two sub-tags. Tag sets were based on the aims of the Advanced Practicum and created as a result of communal discussion with teacher educators from the University of Lapland. Two of the videos were almost 25 minutes long. The remaining four videos were short clips of between 10 and 15 minutes each. After recording, the videos were uploaded to the online portal. The student teachers watched their own videos via the portal at the end of the school day and were able to add comments and/or tags to their videos. In the small number of cases where there was no peer student in the classroom (in the other primary schools in Finland), a supervising class teacher of that school recorded videos.

The guidelines for individual reflection were general, as they were intended to offer student teachers the freedom to plan their self-reflection. The guidelines did not prescribe the quantity or duration of the video-assisted reflection. Student teachers were

not required to engage in peer reflection, video editing or to choose video clips for further discussion.

Supervision was conducted through the app. In previous years, supervision involved pre-supervision, three observed lessons and a final discussion. For the trial, the supervisors did not observe lessons directly, as supervision was based on video recorded by the student teachers through the app. Supervisory arrangements were changed for this research because the purpose of the trial was to investigate the potential of the app as an alternative way to supervise student teachers. Student teachers shared their videos with their supervisors via the portal. Usually, the supervisors watched videos, commented on them and gave feedback through the online portal.

The supervisors and student teachers were asked to meet each other face-to-face or online after each teaching period. As was the case with individual reflection, this collaborative reflection was not strictly guided, and supervisors could choose their preferred approach to the discussions. There were generally two or three meetings: one before the practicum period began, one after the first teaching period and another after the second, final teaching period. The meeting after the first teaching period was between a supervisor and a student teacher. The meeting after the second teaching period was a final discussion between a student teacher (or both student teachers in the case of one supervisor with two student teachers) and their supervisor. For reasons of logistics, two supervisors were not able to have face-to-face meetings with their student teachers.

The data collection and analysis were conducted by one researcher (the first author of this paper). Data were gathered through individual and focus group interviews and video diaries. The interviews were semi-structured and included particular themes, such as the use of the app in the practicum period. Interview questions included: *Were*

you able to use the VEO app in your professional development? How did the VEO app aid or hinder the achievement of your practical goals? Did you notice any changes in your practice after watching the videos? Participants were encouraged to share their ideas and speak about their experiences as they saw fit. The focus group format was chosen for reasons of time management and also as a way of raising discussion among the participants. Each student teacher and supervisor participated in one interview with the researcher.

The student teachers were interviewed in the Teacher Training School during the last two days of the practicum period. There were four focus group interviews between three and five participants each, although one interview was arranged between the researcher and an individual student teacher for reasons of time management. The interviews lasted approximately 30 minutes each. The researcher emailed the interview questions to those student teachers who carried out the practicum period in other schools. In all, eleven student teachers participated in the interviews and one student teacher replied with a short, one-page description of the experience.

The student teachers were also asked to produce two ten-minute video diaries of their experiences that addressed different lessons. They were given some guiding questions to aid their reflection, such as “What did you notice in your videos?” Producing video diaries was a voluntary task, and only three student teachers produced diaries with the help of the app. One of them produced two diaries, and two produced one diary each. The length of the diaries varied from between five and ten minutes each. The student teachers shared their diaries with the researcher via the online portal, and the diaries were uploaded from the portal for analysis.

The nine supervisors who participated were interviewed at the University of Lapland a few weeks after the practicum period had ended. The supervisors were

divided into three groups of three to five participants. The interviews each lasted 30 minutes to an hour. Interview questions for the supervisors included: *How did you use the VEO app during the practicum period (face-to-face/online meetings, post tagging)? Give examples; How do you think video could be used in student teachers' self-reflection and supervision?*

Data analysis

The research data consisted of 54 pages of interviews, one page of reflective writing and 5 pages of video diary transcripts. The data produced by the student teachers and supervisors were analysed separately through the application of principles of content analysis and phenomenographic analysis (Niikko 2003; Perttula 1996) to determine the variance of the participants' perceptions and experiences. The analysis progressed from the setting of research questions to thematising, coding, paraphrasing, looking for connections and categorising the data and ended with a summary of the main themes. The consistency of the data was confirmed by listening to the audio and reading through the transcription notes after the final analysis was completed (Campbell 1997).

The above-described method of analysis was selected to obtain an overview of the data and to compare the different views of the participants. Coded phrases were paraphrased into the third person to increase the personal perspective of the data and bring out the participants' voices. The participants' individual perceptions and experiences are reported in the results section.

Findings

The themes resulting from the analysis of the student teachers' data were:

- Success of the trial,
- Advantages, disadvantages and developmental needs of the video app,

- The app as a tool for professional development,
- The app in supervision, and
- The use of the app in the future.

The themes resulting from the analysis of the supervisor interviews were:

- Success of trial,
- Implementation of supervision through the app, and
- The use of the app in the future.

The presentation of the results in the following sections focuses on the app as a tool for student teachers' professional development, the app as a tool for supervision and the use of the app in the future, as they relate closely to the research questions and aims of this paper. Discussion of the success of the trial and its strengths, weaknesses and the developmental needs of the app is partially embedded within these latter three themes.

The findings of this study are based on interviews with eleven student teachers and nine supervisors, reflective writing from one student teacher and four video diaries from three student teachers. Where appropriate, quotations from the data are included to illustrate the findings. These quotations have been anonymised according to the study's protocol and translated into English by one researcher (the first author of this paper). The letters following the quotations identify the participant type and source of the quotation: ST=student teacher, S=supervisor, I=focus group/individual interview, VD=video diary, R=reflective writing.

Results

The video application as a tool for professional development

According to the student teachers' feedback, all the student teachers considered that

using the app was beneficial for their self-reflection. Through the video material, the student teachers witnessed their own actions and observed themselves through outsider's eyes. The following quotations express some of the student teachers' perceptions and experiences:

It is good to observe yourself from outside sometimes, like through an outsider's eyes, because you cannot watch yourself. It is quite good to use in the practicum period. (ST, I)

It is good to watch yourself behind the camera sometimes ... You can see what your teaching looks like. (ST, VD)

It can be used for seeing some small things, like manners. (ST, I)

These excerpts suggest that the videos gave student teachers an opportunity to look at their teaching from a new angle, which helped them pick up on previously unconsidered details of their teaching practice (Brophy 2004; Snoeyink 2010). However, in the data, student teachers did not specifically mention what new issues they paid attention to in their behaviour.

Three student teachers found that watching themselves was also useful because they did not then have to rely solely on their own recollections. One student teacher summed up her experience this way:

You might think, when you are busy in your head that you somehow screwed things up, there in the front of the class. But when you watch the video, you notice that you were peaceful – that inner feeling did not show outside during the lesson. (ST, VD)

Another student had a similar experience:

By watching a video, I realised that the lesson went well. Without the video, I would still have a feeling that I should have done things differently. (ST, VD)

The student teachers' experiences suggest that watching videos of one's own teaching can improve the viewer's self-efficacy and motivation for action (Goldman et al. 2007; Snoeyink 2010).

Two student teachers stated that watching recordings of other student teachers' lessons was also instructive. One of these student teachers said:

When I recorded [another student teacher's] teaching, and I had to pick some points, it was good because then you realise that these things are present in the lesson, and maybe those things transfer to your own planning and implementation as well. (ST, I)

Another student teacher noted a preference for giving feedback through the video app tags compared with the traditional feedback modes because the tags allowed the student teachers to skip to specific instances:

I think that this way is much more reasonable, that you can write comments on video immediately, compared with when you give written comments after the lesson ... It teaches both the recorder and the student teacher who is teaching that you can follow what has gone well and what has gone badly. (ST, VD)

The excerpts above highlight how viewing videos of other teachers' practice may be beneficial for student teachers (Bryan and Recesso 2006).

The findings are not, though, able to reveal how or to what extent the recording process affected the student teachers' behaviour in the classroom. Discussion about the videos with peer students would have further deepened the student teachers' reflection (Arya, Christ, and Chiu 2014), but no experiences of peer reflection were reported, perhaps because peer reflection was not obligatory.

Nine student teachers found the video app tags to be beneficial to their self-reflection because they helped them to focus lesson observations both while recording and watching the videos. One student teacher said:

It was very beneficial when I watched the videos and saw the comments ... And when I was recording another student teacher's lesson, I watched through particular lenses ... I needed to adopt a certain viewpoint. I learnt to observe the lesson. (ST, VD)

However, three student teachers commented that ready-made tag sets narrowed the scope of their observations and were not always applicable to the recorded lesson. The tag set 'Motivation and Evaluation' was reported as being particularly problematic in classroom observation. These student teachers preferred tagging particular moments and using them as an aid to further discussion about the videos. As one student teacher said:

I felt that they [tag sets] were difficult to use ... it was difficult to find a place for them ... I felt like I did not have freedom to choose ... There could be an option to mark clips on the video ... and use them later for discussion. (ST, I)

Another student teacher thought that it might be of greater benefit if the supervisor rather than the student teacher tagged the video, as the video effectively acts in a supervisory capacity:

I don't see much sense in another student teacher tagging videos ... A university lecturer; it was her main tool. [Lecturer] picked up points for discussion, found a motif for a feedback discussion. (ST, I)

The student teachers' perceptions illustrate how observation can support their ability to recognise aspects of their and others' teaching (Batlle and Miller 2017; Sherin and van Es 2005). However, the use of ready-made frameworks is challenging if student teachers are not first made familiar with the frameworks they will use (Rich and Hannafin 2008).

Three student teachers found it difficult to watch themselves on video and thus did not feel that video-based observation had aided in their learning. Two student teachers stated:

It is difficult for me to watch my own actions, so I do not think it [video] was so [instructive]. (ST, I)

It is always difficult to watch your own actions in video, whether it is your own teaching or almost anything else. (ST, I)

These experiences suggest that some student teachers found the experience of watching these videos difficult (Coffey 2014), but the data did not reveal deeper reasons for the student teachers' reluctance.

All the student teachers felt that the videos of their own teaching did not strongly influence their thinking or teaching practice during the practicum period. Rather, it was thought that feedback from a supervising class teacher from the Teacher Training School had the greatest effect on the student teachers' thinking and practice, as illustrated by this extract:

Maybe, I got some confirmation for myself, but maybe, it was a supervising class teacher's [feedback that affected teaching]. (ST, I)

Previous research suggests that student teachers may be more appreciative of their supervisors' comments than their own video self-reflection (Rich and Hannafin 2008; Tripp and Rich 2012). Teacher reflection and change are affected by many factors, such as former teaching experience, the quantity and quality of reflection, available guidance and feedback from supervisors (Tripp and Rich 2012). It is difficult to determine which changes are the results of video-based observation and which stem from other modes of reflection. This study did not examine the quantity, duration or nature of the student teachers' reflections. There was a variance in the preferred modes of reflection among the student teachers, and so there was also a variance in their aptitude for video learning and adapting their thinking and practice.

The video application as a tool for supervision

As detailed earlier, the supervisors received the student teachers' videos through the online portal, watched the videos and guided the student teachers via the portal and by email. The supervisors and student teachers met each other face to face or online after each teaching period for supervisory discussion for which videos were used as one of the analytical tools.

According to the participants' feedback, using the app in supervision raised certain challenges. Those supervisors with previous supervisory experience in the Advanced Practicum said that their supervision took them almost twice as long as before. The supervisors felt that they could not achieve a full understanding of the student teachers' classroom practices by watching video clips, as these revealed only a small part of the classroom and its lesson. Furthermore, they did not understand the context of the videos, as the videos were not accompanied by a synopsis of their content. The supervisors could not interpret situations if they skipped to the tags added by the recorder. They knew what grade of pupils the student teacher was instructing, but the name of the video usually only indicated the subject of the lesson. It was also often difficult for the supervisors to see and hear (e.g., pupils' voices or faces). Two supervisors expressed thoughts on this matter:

We do not see the situation if we only look at tagged instances. We do not see the situation before it; we might not see what else is happening in the classroom. It is very different if you are there [in a classroom] and see everything ... A video gives the viewpoint of the student teacher who has recorded the video. (S)

This was a very narrow part of the student teacher's journey that I was able to see; [the student] might have done many things in the past. (S)

The student teachers found it problematic that the supervisors could not

experience the classroom atmosphere. As one student teacher said:

[Supervisor] was not able to catch what was happening in the classroom because the recorder had recorded pupils' heads only ... The teacher's voice can be heard but not the pupils' [voices] because they sit with their backs [towards the camera]. It feels more comfortable for me if someone is there, present, compared to a situation where someone watches a video that does not reveal the classroom atmosphere. (ST, I)

Two student teachers stated that, via the video data, the supervisors sometimes came to incorrect conclusions about a classroom because they lacked contextual knowledge.

One student said:

For instance, if the pupils have had some critical incident during the previous break, and then [a supervisor] wonders why there is that kind of atmosphere in the classroom. So maybe it [video] remains a little bit disconnected. (ST, I)

These experiences suggest that video used in this way is unable to capture a full picture of the essential aspects of the classroom environment and culture. The camera was focused on the student teachers, and the pupils' expressions were excluded (Brophy 2004). Contextual information and understanding of the classroom atmosphere in the classroom are integral to lesson observation; their absence could potentially negatively affect the supervisory process. Moreover, the student teachers' limited ability to observe their pupils in the videos presumably hindered their own ability to reflect on pupil behaviour (Shepherd and Hannafin 2008).

The supervisors indicated that they could not depend on tags to skip to important parts of the videos: tags were generally not annotated, and the videos were sometimes not tagged at all. Some student teachers were more confident than others at using the app and tagging videos, so some supervisors received poor videos with no or few tags and no notes, which limited their ability to give feedback.

The student teachers and supervisors did not discuss the videos immediately after recording because the scheduling of discussions only took place after each teaching period. The supervisors commented on the videos before the meetings via the online portal and email and discussed the videos in more detail during the meetings. The period of time between the recording of the video and the supervisory discussion of the first meeting was at least one week; the timespan between recording and the final discussion was up to two weeks.

The supervisors said that face-to-face or online meetings helped them better understand classroom situations when the student teachers provided contextual knowledge and described the lessons in more detail. Two student teachers said that sometimes, they considered the supervisors' feedback lacked relevance because by the time of their meeting their own teaching had progressed to the extent that the feedback was redundant. They said:

I had had several lessons and so that things had been fixed or changed, or we had done it differently during another lesson. Many things were clearer when we discussed what I did after the lesson. (ST, I)

At least I feel that we're getting somewhere, but then we have to discuss something that is old already. It's frustrating. (ST, I)

These comments suggest that the student teachers led the reflection on their teaching practice in the supervisory discussions (Sewall 2009) because the supervisors did not know the context of the recorded lessons. However, the findings do not reveal the nature or import of those reflections.

Supervisors with previous supervisory experience found that with the app, they had fewer opportunities for interaction than on previous occasions. They stated:

I was looking for involvement: how it is when you go to a classroom and kids are there and a student teacher is there, and we discuss ... I lost that, but I haven't found what I got as a replacement. I haven't found it yet. (S)

The supervisory relationship is interaction, always, and the developmental process occurs in interaction. (S)

These experiences suggest that it may be beneficial for specific feedback on video-related issues to follow immediately after the student teacher's recorded lesson. In addition, providing contextual knowledge may help the supervisor better understand a video's content (Shepherd and Hannafin 2008).

The use of the video app in the future

In general, the student teachers and supervisors felt that there would be benefits for the continued use of the app in practicum periods. Two of the student teachers said:

Video technology can be used in practicum periods in the future, definitely. Personally, I liked reflecting on my teaching through videos. (ST, R)

It [video] reminds you about the focus of certain lessons, what issues you need to concentrate on with tags. (ST, I)

Nine student teachers felt that individual reflection in response to the videos would be aided by in-person lesson supervision and subsequent debriefing sessions. One of these student teachers expressed thoughts in the following manner:

Videos can be recorded, but perhaps the university lecturer should visit here [teacher training school] once or twice a week so that he or she is here concretely. (ST, I)

The student teachers' observations suggest that they considered video-led self-reflection and supervision to be two distinct modes of learning and had not considered a

relationship between the two.

Some supervisors proposed the integration of individual reflection in response to using the app with practical supervision. One suggestion was that student teachers should select instances from the recording for further discussion:

If a worker is in some situation, they can be video recorded, and afterwards, they select some specific instances that they think are good to analyse in a group. (S)

Another supervisor noted that involving student teachers in video analysis shifts some of the responsibility for assessment from the supervisor to the student teachers themselves:

It [analysis of videos] moves the responsibility for assessment to where it should be: to an actor, to a student teacher himself/herself. Nobody chooses for them. (S)

The supervisors observed that, during the process of supervision, their role was more broadly as a facilitator of the student teachers' self-reflection. As one supervisor said:

If I think about my role, I probably see it as a facilitator of reflection, student teachers' self-assessment, asking questions and viewpoints. Not reviewing that [video clip] but reviewing what they think about the teaching profession and what kind of aims they have. (S)

These perceptions represent a reflective approach that aims to enable the student teachers' self-reflection and professional development through questions and comments (Franke and Dahlgren 1996).

Two supervisors suggested that the student teachers could design their own tag sets for practicum periods based on their personal needs, and the lessons could be recorded using these tag sets. Supervisors and peer students could help determine the tags and the events to be recorded. After recording, the video would be discussed with peer students and supervisors. Two supervisors offered thoughts on the matter:

You can design a tag set: You discuss with student teachers those things they should concentrate on in their teaching ... and then based on that, we design tag sets. (S)

I think that if you use them [videos] as a support for personal supervision, and some issues come out there ... issues that a student teacher wants to develop, if they [tag sets] are quick to create, a student teacher or a student pair can create a tag set. (S)

These suggestions are examples of how individual and collaborative reflection may be connected to the process of supervision so that the app is not used solely for lesson observation, but also as the basis for a communal discussion about practice (Rich and Hannafin 2008; Sewall 2009).

Discussion and implications

The current study explored student teachers' and supervisors' perceptions and experiences of the use of the video app during one practicum period. The findings suggest that video recordings can support student teachers' self-reflection about their practice, allowing them to observe their teaching from a fresh angle. The findings resonate with some previous studies, which found that a video review helped student teachers examine their teaching from different perspectives (Coffey 2014; Shepherd and Hannafin 2008; Snoeyink 2010). The student teachers in this study appreciated the outsider's eye that video offered them, but in contrast with some previous studies, they did not mention the benefit of being able to observe pupils' behaviour.

The student teachers' feedback suggests that they did not consider that the app had a strong influence on their professional development. These findings are in contrast with other research indicating that video inspired changes in student teachers' thinking and teaching practice (Shepherd and Hannafin 2008; Tripp and Rich 2012). It is

important to note in this regard that, in the current study, the quantity and method of self-reflection and video analysis were not stipulated but rather were left to the student teachers to choose. Likewise, as noted earlier, approaches to both individual and collaborative reflection with supervisors were intentionally left to choice. The student teachers were provided with VEO tags but no guidance on how to use them. Issues such as the restricted view of the classroom and screen and voice quality may also have affected the situation. Thus, the quantity and method of self-reflection and limited opportunities for pupil observation may also be reasons that the student teachers in this study did not comment on pupil behaviour or learning, whereas the student teachers in Snoeyink's (2010) and van Es and Sherin's studies (2010) did.

In some previous studies, the student teachers have been given guidelines to help them focus on specific aspects of their videos, such as pupil engagement or identifying critical instances for further reflection. Reflection has been individual (Snoeyink 2010) or collaborative (Sherin and van Es 2005) or both individual and collaborative (Arya, Christ, and Chiu 2014). The findings of those studies highlight the value of guiding frameworks and social groups in student teachers' reflection on practice. To promote professional development through video, it may be best for student teachers to refer to specific guidelines when analysing videos of their teaching through the app. Such guidelines could be applied in discussions with supervisors and peers. Another possibility is that to address the video's restricted view of the classroom and technical problems with cameras, pupils could be made a focus of observation, and the classroom could be recorded both different positions within it.

The participants' experiences indicate that using the app as a supervisory aid introduced challenges when video excerpts were used as the sole basis for lesson observations carried out by a supervisor. The analysis of the video material suggested

some of the same issues that were apparent when using video in earlier research: difficulty in observing pupils, screen and voice quality concerns and student teachers' reluctance to watch videos of their own teaching (Brophy 2004; Shepherd and Hannafin 2008). In addition, the current study revealed other potentially limiting factors not widely discussed in earlier research, such as the exclusion of significant elements of the classroom environment and culture.

Overall, the student teachers and supervisors perceived that there were some benefits to using the video app. However, this study's findings also indicate that the process of bringing a new self-reflection tool to teacher education is complex and may be challenging. In some senses, this is inevitable: Student teachers and supervisors may be comfortable with traditional in-person lesson supervision, and changing the ways of supervising student teachers' practice can cause resistance. Understandably, student teachers appreciate the comments of their supervisors, sometimes more so than their own thoughts (Shanahan and Tochelli 2014; Tripp and Rich 2012). Video can change the aim of supervision and the roles of supervisor and student teacher: In lesson observations, the focus is on assessing the student teachers' actions, whereas video highlights the facilitation of the teachers' process of self-reflection. This brings a more reflective approach to supervision, questioning and commenting to consider the efficacy of teaching practices beyond classroom episodes (Franke and Dahlgren 1996).

Limitations

It must be borne in mind that the sample size for this study was small, and the participants were student teachers and supervisors who were willing and able to talk about their experiences. Another limitation is that the study was conducted as a part of teacher education studies, which might have affected what the participants said in the focus group discussions. The findings should thus, be interpreted cautiously and not be

generalised.

Conclusions and directions for further research

Based on our experiences in this study, we suggest that it may be beneficial for student teachers to design their own tag sets, record lessons using them, reflect on their teaching and select instances for discussion with their supervisors and fellow students to guide their learning (Arya, Christ, and Chiu 2014; Bryan and Recesso 2006). Supervisors and fellow students can help student teachers identify occurrences in videos that merit further discussion. Providing context encourages a more rewarding interpretation of the episodes under discussion (Arya, Christ, and Chiu 2014). The emotional atmosphere may be impossible to experience through video, but this can be addressed by discussing videos collaboratively. In this way, video excerpts can be used purposefully in the supervisory process, and student teachers can play an active role in their own learning (Brophy 2004).

It is important to note how video affects the traditional ways of supervising student teachers' practice. Developing new methods of supervision requires supervisors' extant teacher identities to be adaptable (White 2014), and their professional development should thus be supported (Korthagen 2001). Student teachers and supervisors must become familiar with the app being used, and it may be worthwhile for them to receive technical training in appropriate use of the app (Batlle and Miller 2017). The traditional methods of supervision and video-based observation both have their advantages and can be used simultaneously to complement each other.

As this study focused on the participants' perspectives and their experiences of using the VEO app, future research could explore the nature of student teachers' self- and collaborative reflection to provide evidence of how video affects student teacher thinking and to reveal the processes that lead to change in teacher thinking and practice.

It would be beneficial to study the role of supervisors and peers in the facilitation of student teachers' self-reflection while also looking at ways to overcome a video's limitations in representing the classroom situation. Finally, further, larger scale research into student teachers' and supervisors' attitudes towards using a video app and the reasons behind those attitudes would aid in understanding the potential benefits that video technology might bring to different aspects of future teacher education programmes.

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