

2014

Using Video to Develop Skills in Reflection in Teacher Education Students

Anne M. Coffey Dr

University of Notre Dame Australia, anne.coffey@nd.edu.au

Recommended Citation

Coffey, A. M. (2014). Using Video to Develop Skills in Reflection in Teacher Education Students. *Australian Journal of Teacher Education*, 39(9).

Retrieved from <http://ro.ecu.edu.au/ajte/vol39/iss9/6>

This Journal Article is posted at Research Online.

<http://ro.ecu.edu.au/ajte/vol39/iss9/6>

Using Video to Develop Skills in Reflection in Teacher Education Students

Anne M. Coffey
University of Notre Dame Australia

Abstract: Teacher education students confront the challenging task of acquiring a unique and complex set of skills during their courses. These skills are acquired through the study of education theory together with practical experience in the classroom. Perhaps one of the most important skills that students quickly need to develop is that of reflective practice. It is only through a critical and detailed analysis of their performance that strengths and weaknesses can be ascertained and addressed. Video has been used as a tool in teacher education for many years and provides a means by which a teaching episode can be captured more permanently to be used as a point of reference for reflection. This paper discusses the concept of reflection and examines the use of video to enhance the development of these reflective practice skills in a cohort of Graduate Diploma of Education students. Students indicated that the use of video, in conjunction with written feedback from teachers, had enhanced their capacity to reflect on their teaching skills.

Introduction

Teaching is a complex and challenging undertaking. When one unpacks the different aspects of a teacher's work the list is long and varied and encompasses more than merely standing in front of a class of students and delivering content. Research consistently reports that the single most important factor in student achievement is teacher quality and Riley (2009) differentiates between *teacher quality*, described as what teachers "do" and *teaching quality* which comprises what students "learn". Churchill, et al. (2011) state that teacher quality comprises a teacher's identity together with knowledge and skills in pedagogy, content and theory. Teaching quality, they contend, depends upon the ability to personalise learning, nurture a supportive classroom, implement a relevant curriculum and continuously monitor and evaluate the performance of their students. Cornish and Jenkins (2012) argue that teachers who engage in regular critical reflection shape their own development and that this self assessment is a key element in continual self improvement and, consequently, teacher quality.

Literature in teacher education is replete with calls to embed experiences throughout a teacher education course to assist students develop these crucial skills in reflective practice (Osterman & Kottkamp, 2004) so that they can use these when they are teaching. The potential of technology to provide an avenue by which such experiences can be provided has also been documented (Tan, Wettasinghe, Tan & Hasan, 2010). One such technology is the use of video analysis whereby students are video-taped in a teaching situation and then prompted to constructively analyse their performance (Sherin & Van Es, 2005). By identifying strengths and weaknesses students obtain a clear understanding of what they need to improve and thereby begin to develop skills in critical reflection. Indeed the use of video allows for students to view teaching performances for a number of different purposes (Wu & Kao, 2008).

What do we mean by Reflective Practice in the context of teacher education?

The bold statement attributed to Socrates in Plato's "Apology" that "the unexamined life is not worth living" is well known. Put simply, he believed that the purpose of life was continued personal and spiritual growth which could be achieved through ongoing reflection. Over the past twenty years considerable research has investigated the concept of effective

teaching. The results of this research have continually pointed to the importance of reflection as a key element of good educational practice for, through reflection, one gives deeper consideration to the cognitive, social and moral implications of teaching (Pedro, 2006).

The term reflection itself is one that is open to interpretation. For some it simply means thinking about something whereas, for others, it may also be interpreted as being a much deeper level of thought that prompts specific actions (Loughran, 2002). Educationally speaking, reflective practice entails the cognitive process of thinking about, and monitoring, one's practice in conjunction with consideration of existing knowledge about teaching so that practice can continually be improved (Parsons & Stephenson, 2005). Students exiting teacher education programs should be reflective practitioners who can engage in both self evaluation and problem solving (Leitch & Day, 2000). Furthermore, students need to make time for reflection, be adept in problem solving and have a capacity to question the status quo (Larivee, 2000). Pedro (2006) recommends that writing can be an excellent tool for student teachers to develop and hone their reflective skills for "doing and analysing what they do" (p. 132). A deeper discussion of the term "reflection" is warranted.

The concept of reflection was introduced by Dewey (1933) who defined the term as "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends" (p9). Dewey (in Pedro, 2006, p.130) operated from the premise that teachers should be "thoughtful and alert" in order to grow as practitioners. To do so required three attitudes to be developed: open-mindedness, whole-heartedness and responsibility (Jay & Johnson, 2002; Pedro, 2006). In order to develop these attitudes, careful and detailed consideration of one's own practice was necessary which, as Schon (1996) suggests, could take place under the guidance of an experienced teacher.

Research into the teaching of reflection has typically focussed upon the content, or what teachers reflect upon, and the process, or how teachers reflect (Jay & Johnson, 2002). Many authors have discussed different levels of reflection which generally progress from a preoccupation with the more technical aspects of teaching to a consideration of alternative approaches to the various dilemmas that arise in teaching (Cavanagh & Prescott, 2010). Liston and Zeichner (1991) describe four levels of reflection which include factual (reflections focussed on classroom routines and procedures), procedural (focussed on evaluation of student performance), justificatory (focussed on why certain practices were employed) and critical (focussed of the moral aspects of teaching). One could contend that with greater experience teacher education students should have the capacity to move beyond the factual and procedural levels to thinking much more deeply about the moral and ethical dimensions their practice. They can begin to think beyond the four walls of the classroom to consider how the social, moral, ethical and political milieu impacts on their work and vice versa. Nagle (2009) bemoans the manner in which the current accountability requirements extant in most educational settings has resulted in the focus on reflection in teacher education programs on the more technical aspects of a teacher's practice.

Perhaps, in the realm of teacher education, students would be better reminded of the words of another philosopher, Santayana who stated that "he who does not remember the past is condemned to repeat it" (1905, p.284). It is only through an examination of performance that one gains an insight into practices that should be retained, those practices that need to change as well as the implications of one's practice. Moving beyond the simple application of a knowledge base and skill set to the point where the teacher education student is able to modify their practice to fit particular teaching contexts and perhaps develop new strategies, might be considered the point at which they have become reflective practitioners (Larivee, 2000). Parsons (2005) notes that frequently, students who fail a school practicum experience are those

who are unable to identify areas of their practice that require improvement, continually repeating their mistakes, irrespective of advice from their supervising teachers.

Reflection may well be an intimidating experience for beginning teachers who have yet to develop the wisdom and experience that comes with time in the classroom (Cavanagh & Prescott, 2010). A sense of “I don’t know what I don’t know” may well underpin the trepidation that beginning teachers face when being asked to reflect upon their performance. Alerting students to the increasingly sophisticated range of knowledge and skills that should be acquired throughout their teaching degree can cue their attention to the appropriate aspects of their practice on which to reflect. It is therefore important that teacher educators provide appropriate experiences that will afford opportunities for student teachers to acquire these skills in reflection (Bryan & Recesso, 2006). This is indeed a complex task (Palliotet, 1995) and is one that may be aided by the use of a number of different methods including journal writing, structured microteaching followed by reflective writing, use of critical incidents, multimedia cases and video (Calandra, Brantley-Dias, Lee & Fox, 2009). There has been growing interest in the use of video as a potential tool (Rosaen et al, 2010) to assist teacher education students in building their reflective practice skills.

In Australia, becoming a teacher involves embarking upon a four year teacher education course which will combine formal university studies with practical experiences in schools. Throughout the four years students will be encouraged to develop their reflective skills through consistently asking themselves questions about their performance and how they might improve. Students with a previous university degree, who wish to become secondary teachers, may enrol in a Graduate Diploma of Education course which is of one year’s duration. The course typically comprises units in curriculum, classroom management and methodology as well as classroom experience.

For students in such graduate entry programs, which are typically either one or two years duration, the need to quickly develop reflective practice skills is paramount. The students must develop an appreciation of the complex nature of teaching as well as their own strengths and weaknesses. These students have fewer opportunities for practical classroom experience as well as the prospect of developing these skills in ‘theory’ units. Cornish and Jenkins (2012) argue that embedding reflection in assessment tasks is one way in which students can begin to develop reflective skills in such units. Given the truncated nature of graduate programs it is incumbent on teacher educators to utilise the most expedient means of developing skills in reflection. Students have little time before they embark on their final teaching practice at the end of which they are required to meet the graduate standards prescribed by teacher registration bodies.

Using video to develop skills in reflection

Video has been used in teacher education since the 1960s (Sherin & Van Es, 2005). This tool has been regarded as having the potential to provide a means by which the complexities of teaching might be captured thereby enabling teacher education students to observe and reflect upon what they are seeing (Wang & Hartley, 2003). Sherin and Van Es (2005) discuss the concept of a teacher’s ability to “notice”. Video is regarded as a tool that can help teacher education students develop the ability to notice what is occurring in the classroom.

According to Sherin and Van Es (2005) noticing is comprised of three different components. First is the capacity to determine what is important in a teaching situation. In a typical classroom there are numerous interactions and events occurring concurrently so the need to direct attention to the most salient of these events is important. Second is the capacity to draw connections between the interactions observed in a teaching situation and the broader

principles of teaching and learning that they signify. Put simply, teacher education students need to decipher the relationships between the various events that occur in the classroom. Finally, noticing entails teachers using their personal knowledge and experience to make judgements about specific teaching situations. These three elements give rise to an understanding of the complex environment that is the classroom. It is incumbent upon teacher education students to develop the capacity to make sense of the events that occur in the classroom. Sherin and Van Es (2005) found that, through the use of video, students involved in their research were able to make more evidence-based comments about their teaching.

So what features of video enable this more detailed capacity to notice? Perhaps the most compelling feature is the capacity of video to preserve both the verbal and non-verbal elements of a teaching situation (Quigley & Nyquist, 1992). The viewer can pause, annotate, rewind and replay the video (Calandra, et al, 2009; Quigley & Nyquist, 1992; Sherin & Van Es, 2005; Snoeyink, 2010). This provides the opportunity for multiple viewing of the teaching situation enabling the viewer to observe elements and events that occurred in the teaching situation that might otherwise have gone unnoticed (Zhang, Lundberg & Eberhardt, 2010). Students are afforded the chance to see themselves from a “self-as-observer perspective” (Quigley & Nyquist, 1992, p. 326) or from a different vantage point (Snoeyink, 2010) and move from reflection on vague recollections of classroom events, to more critical and evidence based analysis of how the lesson unfolded (Rosaen et al, 2010). Wang and Hartley (2003) note that the potential of video lies in its capacity to “document the richer, more complex events” (p. 112) in the classroom environment which provides student teachers with the appropriate background to “observe and reflect carefully on different issues of teaching and learning in action” (p. 112). Without this capacity to view themselves, students rely on memory alone to reflect upon their teaching. Video enables them to “embrace the dissonance” (Snoeyink, 2010, p.102) between what they remember from memory and what they view in their video. Repeated viewing is particularly helpful in this regard (Wang & Hartley, 2003). This helps the student teacher to avoid complacency which can act as a barrier to their growth as educators.

Teacher educators can prompt the students to watch for specific elements when viewing their video which compels the students to look more deeply than they might otherwise have done. Students can be guided to attend to the more sophisticated and less obvious aspects of their teaching in order to gain an in depth understanding of the multifaceted nature of the classroom (van den Berg, 2001). Providing these cues is important as there can be a tendency for the use of video to lack a specific purpose or be methodical (Bryan & Recesso, 2006). Video also provides the ability to watch seasoned professionals at work in the classroom. Using video clips of exemplary teachers at work enables pre-service teachers to participate in guided reflection which contributes to their ability to become a reflective practitioner (Miels, 1999; Newhouse, Lane & Brown, 2007). The students gain a much deeper appreciation of their own teaching behaviours and may, in turn, be more receptive to feedback about their teaching (Wang & Hartley, 2003). They may also compare their current performance with those of the past and hence gain an insight into their development as teachers (Quigley et al, 1992).

A number of benefits of using video in teacher education programs have been reported. It has been found that students who have the opportunity to use video write longer, more evidence based and more pedagogically driven reflections on their teaching performances than those who did not have access to video (Bryan & Recesso, 2006; Calandra et al, 2009; Sherin & Van Es, 2005). Those without the use of video tended to write more about interpersonal relationships and classroom management. Snoeyink (2010) reports several benefits from the use of video which led to the decision to require all teacher education students in their programs to reflect and analyse on at least one video of their teaching. Firstly, the student teachers indicated that it was useful to see themselves as their school students would. This

different perspective afforded through the use of video was regarded as being particularly useful. Secondly, the student teachers stressed the value of viewing their videos as an aid for identifying not only areas for improvement but also in helping them to find ways to address their deficiencies. Thirdly, video enabled students to see their own idiosyncrasies or mannerisms that might impact their teaching. For example, gestures, body language, facial expressions, voice (rate, pitch, volume and tone) and any phrases or words that were overly repetitive could be identified. Finally, video provided the opportunity for them to scrutinise their personality in the classroom which led to some students making conscious decisions for change.

However it should be noted that there are certain barriers to the use of video by student teachers, particularly when used as a tool to reflect upon their performance. There may be a tendency for some students to become overly concerned with their own appearance or how they sound, rather than looking more deeply into their teaching performance (Pailliotet, 1995). Indeed the process of simply watching themselves on video may be confronting and stressful for some (Snoeyink, 2010) which can lead to a degree of superficiality in their reflections. Some students may be reluctant to engage in self-criticism or reveal too many areas requiring improvement for fear that they may be marked down (Bryan & Recesso, 2006). Finally, without careful guidance from teacher educators, the focus of the students when viewing their video may be directed to shallow, less important aspects of their teaching (Bryan & Recesso, 2006; Yerrick, Ross & Molebash, 2005). I'Anson, Rodrigues and Wilson (2003) note that the triangulation of a teaching episode through video review, together with written or verbal peer or tutor comment, is important in scaffolding the development of skills in reflection. Teacher educators therefore need to make very clear to their students the specific aspects of their teaching upon which to focus when analysing their video. If they can also provide written feedback to the students the students have a more powerful armoury to use when reviewing and reflecting upon their video footage. Without this targeted viewing the likelihood of the students making appropriate changes to their practice is reduced. Students also need the opportunity to review their video from the perspective of their peers or teacher educator so that they gain a different perspective of their teaching.

Recent developments in motion and performance analysis software in sport science have enabled detailed interrogation of performance in a sporting context. For example game strategies, tactics, plays used by opposition teams and aspects of individual performance can be observed and analysed. Templates to code the footage of key behaviours or interactions during a skill session can be developed. These can then be annotated, sorted, and tallied in numerous ways (Hands, Parker, Coffey, Clark-Burg, Das et al., 2009). The use of similar performance analysis software in an education setting offers an exciting avenue for teacher educators to provide opportunities for pre-service teachers to analyse their own performance. More especially, web-based versions of video analysis applications increase the access, enabling students to analyse their footage from any computer via the web.

Using video footage to develop reflective skills in teacher education students.

The purpose of this research was to ascertain the benefit students in a Graduate Diploma of Education course would derive from the opportunity to view video of themselves in a micro-teaching episode. In this particular course, students undertake a number of education units together with two school placements – one a two week classroom ‘immersion’ and the other a 10 week internship. The unit in which the research was conducted was a general pedagogy unit conducted in their first semester where students are introduced into curriculum and lesson planning, instructional strategies and assessment. In the first assessment the students are

required to write a detailed lesson plan for a 50 minute lesson. The second assessment entails “teaching” 10-15 minutes of the lesson to their tutorial group and then reflecting upon this experience. This assessment provides the opportunity for the students to practice their teaching skills and then reflect upon this experience. The students are video-taped presenting their lesson. The tutor also provides written feedback to the students. This feedback covers verbal and non-verbals skills, instructional strategies, use of time, vocal skills and classroom climate that was created. The students are required to view their video, consider their tutor’s feedback and then write a reflection outlining their strengths and weaknesses, areas requiring improvement and to outline how they intend to address the issues they have identified. Immediately following this assessment students undertake their two week classroom immersion in which they are required to teach in both small group and whole class situations.

Students involved in this research project used Critique – a purpose built web-based program that was based upon performance analysis software in sport science. Once the students had been videoed their footage was uploaded to the Critique website from where they were able to access their video from any computer or mobile device. Students were provided with a unique code to access their particular footage thereby ensuring their privacy. The teacher educator has the capacity to create a tagging template whereby they identify specific aspects of the teaching episode that they wish the students to focus upon. Each of the buttons would indicate one specific aspect of performance upon which to concentrate. For example, use of hand gestures. Each time the student views a particular gesture by clicking on the button a more permanent record is maintained. For example, at which points in the lesson were gestures made. Students could see how many times a particular gesture was made as well as making notes in the space next to each occurrence. Students are also able to note the amount of time particular aspects of their lesson took to conclude as well as the overall time of the lesson. For example, they can determine for how much of the overall 15 minutes, their students actively engaged in actually doing something. The specific tags are aligned with the written feedback sheet that is provided to the student. In this way the teacher educator is able to direct the focus of the students to particular aspects of their teaching. Further, students, by having the opportunity to replay their video can ascertain certain things that perhaps went unnoticed by their tutor.

Methods

A case study methodology was used to study the cohort of students enrolled in the Graduate Diploma in Education (Secondary). The students were intending to teach in a range of different subject areas and had all had minimal or no formal teaching experience in secondary schools. Students were invited to complete a questionnaire at the end of the unit and participation was purely voluntary. Interestingly all students chose to complete the questionnaire. The questionnaire provided the opportunity for students to respond to a set of structured questions as well as to provide further comment about their experience in terms of accessing, viewing and the value of the video experience. These questions focused on simplicity of use, benefits to their learning, how motivating the experience had been their enjoyment of the experience and whether they would recommend this experience be made available in other units. They were also asked to indicate whether they had viewed their footage and, if so, how long they watched their video. Further, at the completion of the unit, after final grades had been awarded students were invited to provide their written reflection to the researcher. This enabled the collection of both qualitative and quantitative data. Descriptive statistics were used to ascertain frequency data whilst the qualitative components were analysed using content analysis. Neuman (2006) contends that content analysis is a

useful tool that enables the research to make sense of specific features of content that might otherwise go unnoticed. Thematic coding was used draw out the central themes that emerged from both the open-ended questions on the questionnaire.

Results and Discussion

There were 95 respondents to the questionnaire. The intent of the survey was to simply determine how the students reacted to the experience of watching their video footage. Students were first asked whether they had indeed watched their video footage with 92 responding in the affirmative. Those who did not access their footage all indicated that technical issues had prevented their access so they simply relied on memory and the written feedback to write their reflection.

Students were also asked to comment on the amount of time they had spent watching their video footage. These results are presented in Table 1.

Table 1. *Time students spent viewing video footage of their teaching presentations*

Time	5-10mins	11-20min	21-30 mins	31+ minutes
% of students	22.1	32.6	32.6	11.6

Given that the student presentations were of 10-15 minutes duration the above indicates that the majority of students watched their presentation more than once. Students had clearly taken the opportunity to view themselves multiple times which would provide an opportunity to perhaps observe elements of their teaching that they had missed on their first viewing.

Overall the students reacted in a positive manner to the opportunity to view video footage of themselves teaching. The results in Table 2 indicate that, for the majority of students, the opportunity to engage in the activity had been a constructive one.

Table 2. *Student questionnaire responses (%)*.

Rating	1.Strongly Disagree	2	3	4	5	6	7.Strongly Agree
Beneficial	0	1.08	3.26	5.43	19.56	23.91	46.73
Motivating	1.05	6.31	3.15	17.9	21.05	25.26	25.26
Simple	0	6.52	4.35	13.04	23.91	27.17	25
Enjoyable	5.32	8.51	14.89	14.89	27.66	11.7	18.09

It was clear that the students had found the overall activity to be of assistance to their development as a teacher with almost half indicating that they strongly agreed that viewing the video was beneficial. Similarly the students reported the activity to be motivating and simple. Whilst some were unable, through technical issues, to access their video, for those who could access proved to be a relatively simple process. Ease of access is important as there could be a tendency to “give up” with students basing their reflections on the written feedback and their own thoughts about their presentation. It is worth noting that the written reflections were marked according to their depth and degree of sophistication in the analysis of their performance. No marks were awarded for having referred to the video. Hence it is likely that if the process of accessing their video was a convoluted one the likelihood of the students persisting would have been reduced.

Watching oneself on video can be a confronting experience so it is not surprising that the students would be less positive in their responses to this question. This particular assessment is given only five weeks into the course which means that whilst the students have begun to form relationships they are largely “performing” in front of students most of whom they do not know well. Similarly, depending upon their background they may have had little experience in public speaking. Simply having to present in front of their peers was a very difficult undertaking for many of the students. Having to contend with the added pressure of being filmed and then having to watch their video added to the stressful nature of the experience.

Analysis of the written responses revealed a number of themes. One of the key themes to emerge was the degree to which the students had found the experience to be a positive one and one that had contributed to their development of skills in reflection. These comments echo the results in Table 2:

Hard to watch at first as you can clearly see the areas that need to be improved, however it is an extremely useful tool. It is difficult to know where you need to improve until you view it back.

Overall very good experience and very useful especially seeing it before my first prac. I think it is a great tool for novice teachers – they actually get to see themselves in action. This is really helpful in reflection and improvement of skills and tactics.

I thought I performed much worse than I actually did, before watching the video. I found it really helpful looking from an outside perspective and picked up on non-verbal and verbal cues/things I had to remedy that I wouldn't otherwise have realised or realised to a full extent.

However whilst most comments were positive there were also a number of students who found that the video was not a key factor in reflecting upon their performance. For them the written tutor feedback was perhaps more valuable. The following were some of the reasons students provided:

Just as long as you remember the comments given in class and have the written component with you the video is just extra and additional help.

I know I didn't do as well as I had originally hoped so I didn't want to relive the experience. I remembered all of the comments given to me.

I think my initial reaction after class was more beneficial.

Overall, very few students made a negative comment which would suggest that viewing the video footage had been a useful experience and added to their learning from this particular assessment.

The actual written reflections submitted by the students also, on occasion, made reference to their video footage. Upon reading these reflections it became apparent that the interplay of the video footage, written feedback and their reflections was evident:

When I observed myself I realised that I concentrated on the table of students nearest to me, I think this was partly due to nervousness (keeping myself near the focus of the class and the technology) but it did lead to the farther table getting less attention and also to a lack of focus from those students towards the end.

I can address the weaknesses I identified in the video playback by making a conscious decision to increase the volume and project my voice in the room; try and relax; obtain more experience to assist with my nervousness and inexperience; slow down the speed of my delivery of my lesson; improve my posture and change my body language to appear more comfortable and confident; minimise the use of my hand gestures.

As the footage moved on I realised that there were several distractions which in an ordinary year 10 class would cause confusion and disruption; handing out the paper and crayons whilst speaking would have made it hard for the students to follow what I was

saying. This could have resulted in a need to repeat that part of the class – this was an area where I could have inserted a much needed pause to allow information to sink in and hand out materials...My key learning was that my topic and timekeeping was unrealistic for a year 10 class.

Another negative aspect that was mentioned in my feedback and I noticed in my video was that I had not ensured that the rest of the class was listening when group three was giving their answer. This is a good observation for me as it has drawn my attention to the fact that I was quite unaware of the rest of the class when listening to the answers.

From these comments it is evident that having the opportunity to actually watch themselves teach had provided the students with added information upon which to reflect. Whilst the tutor was able to comment on aspects of their performance, being able to watch the video footage provided a chance for the students to notice other elements of their performance that may have been missed. The combination of the “expert” feedback from the tutor and video footage provided rich information for the student to consider in developing their teaching skills. Drawing the attention of the student to the many elements at play in a typical classroom is essential. Indeed one student commented:

It gave me confidence that teaching is something I can do and that I will enjoy.

However, it has also highlighted to me the amount of work needed to plan a lesson well, and all the aspects that must be considered when presenting a lesson.

Students enrolled in the Graduate Diploma of Education must quickly come to grips with the intricacies of planning and presenting lessons. Indeed, the students in the program at the university in which the research was undertaken complete a two week classroom immersion after eight weeks in the course. Whilst this experience is largely observational they are also required to undertake some teaching. However, equally important to the development of the students’ own presentation skills is the development of an appreciation of the sophisticated skill set possessed by effective teachers. The students need to be able to direct their focus to identifying these skills in order to incorporate them into their own practice. Activities such as the one described above can go part way into providing the students with the skills to be able to critically analyse a teaching episode.

Conclusion

The research conducted with the Graduate Diploma in Education (Secondary) students supports the findings of other research investigating the use of video with pre-service teachers. The respondents had taken the opportunity to view their video footage on multiple occasions and were able to discern particular aspects of their teaching that were both strengths and weaknesses. Having the opportunity to view their footage enabled them to reconcile what they saw in their video with the written comments that they received. This was much more powerful than simply relying on written feedback alone. They were also able to determine other aspects of their performance that may have been missed by their tutor.

One of the benefits of the experience is that students can view first-hand how their students would see them in a real classroom situation. Having an early opportunity to identify areas of weakness and identify strategies to address these weaknesses is particularly important in graduate-entry teacher education programs. Underpinning this capability is the capacity of students to quickly develop their skills in critical reflection. By having key areas upon which to focus when viewing the video footage enables the students to direct their attention to the more complex skills that they need to acquire. One of the strengths of Critique is the capacity for the teacher educator to cue the focus of the students to particular aspects of micro-teaching episodes. Students were able to annotate specific features of their teaching performance such

as the use of questioning. This would enable, should this tool be embedded in a number of units throughout a pre-service teacher education course, for the teacher educator to prompt student attention to increasingly sophisticated aspects of the teaching enterprise. Alongside this is the capacity for students to engage in deeper critical reflection, perhaps through targeted assessment tasks (Cornish & Jenkins, 2012) in line with their developing understanding of the complexities of teaching. This encourages the students to look more deeply rather than focusing upon superficial aspects of their performance. The focus of this research was very much directed to the student use of the video-analysis tool Critique. Further research using Critique which would include comparison of the written critical reflections at different points in a teacher education course is recommended.

The results of this research confirm earlier findings as to the benefits of the use of video in developing skills in critical reflection. Whilst the students in this research were engaged in a peer teaching situation video has been used in a variety of other ways. Given the portability of digital video cameras and the rich opportunity that is provided by students seeing themselves teach (in whatever context), the continued exploration of ways to incorporate such experiences into teacher education programs is a worthwhile undertaking. In graduate teacher education programs, which demand that students develop their teaching skills in a much shorter time period, the use of video and analysis tools such as Critique, would seem to be particularly useful. As noted by Nagle (2009) it is not sufficient to simply provide practical opportunities for students to develop their reflection skills. These opportunities need to be very purposeful in order to facilitate the development of these skills. The use of video would seem to be a very powerful ally for use in developing these important skills in critical reflection in graduate entry teacher education programs.

References

- Bryan, L.A., & Recesso, A. (2006). Promoting reflection among science student teachers using a web-based video analysis tool. *Journal of Computing in Teacher Education*, 23(1), 31-39.
- Calandra, 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. <http://dx.doi.org/10.1080/15391523.2009.10782542>
- Cavanagh, M., & Prescott, A. (2010). The growth of reflective practice among three beginning secondary mathematics teachers. *Asia-Pacific Journal of Teacher Education*, 38(2), 147-159. <http://dx.doi.org/10.1080/13598661003678968>
- Churchill, R., Ferguson, P., Godinho, S., Johnson, N.F., Keddie, A., Lett, W. et al. (2011). *Teaching: making a difference*. John Wiley & Sons: Milton, Qld.
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston: DC Heath and Company.
- Hands, B., Parker, H., Coffey, A., Clark-Burg, K., Das, A., Gerrard, P., et al. (2009). *Interactive video analysis to develop learning and assessment of university students' practical and communication skills*. NSW: Australian Learning and Teaching Council.
- l'Anson, J., Rodrigues, S. & Wilson, G. (2003). Mirrors, reflections and refractions: The contribution of microteaching to reflective practice. *European Journal of Teacher Education*, 26(2), 189-199. <http://dx.doi.org/10.1080/0261976032000088729>
- Jay, J.K., & Johnson, K.L. (2002). Capturing complexity: a typology of reflective practice for Education. *Teaching and Teacher Education*, 18, 73-85. [http://dx.doi.org/10.1016/S0742-051X\(01\)00051-8](http://dx.doi.org/10.1016/S0742-051X(01)00051-8)

- Larivee, B., (2000). Transforming teaching practice: Becoming the critically reflective teacher. *Reflective Practice*, 1(3), 293-307. <http://dx.doi.org/10.1080/713693162>
- Leitch, R. & Day, C. (2000). Action research and reflective practice: towards a holistic view. *Educational Action Research*, 8(1), 179-193 <http://dx.doi.org/10.1080/09650790000200108>
- Loughran, J.J. (2002). Effective reflective practice: In search of meaning in learning about teaching. *Journal of Teacher Education*, 53(1), 33-43. <http://dx.doi.org/10.1177/0022487102053001004>
- Miels, J.C. (1999). Videotaped teaching segments and the preservice teacher: Developing reflective practice. *The Teacher Educator*, 34(3), 181-188. <http://dx.doi.org/10.1080/08878739909555198>
- Nagle, J.F. (2009). Becoming a reflective practitioner in the age of accountability. *The Educational Forum*, 73, 76-86. <http://dx.doi.org/10.1080/00131720802539697>
- Newhouse, P.C., Lane, J., & Brown, C. (2007). Reflecting on teaching practices using digital video representation in teacher education. *Australian Journal of Teacher Education*, 32(3), 1-12. <http://dx.doi.org/10.14221/ajte.2007v32n3.5>
- Pailliotet, A.W. (1995). I never saw that before: A deeper view of video analysis in teacher education. *The Teacher Educator*, 31(2), 138-156. <http://dx.doi.org/10.1080/08878739509555107>
- Parsons, M., & Stephenson, M. (2005). Developing reflective practice in student teachers: Collaboration and critical partnerships. *Teachers and Teaching: theory and practice*, 11(1), 95-116. <http://dx.doi.org/10.1080/1354060042000337110>
- Pedro, J. (2006). Taking reflection into the real world of teaching. *Kappa Delta Pi Record*, 42(3), 129-132. <http://dx.doi.org/10.1080/00228958.2006.10516449>
- Quigley, B.L., & Nyquist, J.D. (1992). Using video technology to provide feedback to students in performance courses. *Communication Education*, 41(3), 324-334. <http://dx.doi.org/10.1080/03634529209378892>
- Riley, C. (2009). Teacher quality v teaching quality: What's the difference? *Innovations*, 8, 6-9
- Rosaen, C.L., Lundeberg, M., Terpstra, M., Cooper, M., Fu, J. & Niu, R. (2010). Seeing through a different lens: What do interns learn when they make video cases of their own teaching? *The Teacher Educator*, 45, 1-22. <http://dx.doi.org/10.1080/08878730903386849>
- Santayana, G. (1905) *The life of reason*, New York: C Scribner's Sons,
- Schon, D. A. (1996). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco: Jossey-Bass.
- Sherin, M.G. & Van Es, E.A. (2005). Using video to support teachers' ability to notice classroom interactions. *Journal of Technology and Teacher Education*, 13(3), 475-491.
- Snoeyink, R. (2010). Using video self-analysis to improve "withitness" of student teachers. *Journal of Digital Learning in Teacher Education*, 26(3), 101-110.
- Tan, A.-L., Wettasinghe, M., Tan, S.-C., & Hasan, M. (2010) Reflection of teaching: A glimpse through the eyes of pre-service teachers. In C.H.Steel, M.J.Keppell, P. Gerbic & S. Housego (Eds), *Curriculum, technology & transformation for an unknown future. Proceedings ascilite Sydney 2010* (pp.1-12). http://ascilite.org.au/conferences/sydney10/procs/Ail_Ling_Tan-full.pdf.
- van den Berg, E. (2001). An exploration of the use of multimedia cases as a reflective tool in teacher education. *Research in Science Education*, 31, 245-265. <http://dx.doi.org/10.1023/A:1013193111324>
- Wang, J. & Hartley, K. (2003). Video technology as a support for teacher education reform. *Journal of Technology and Teacher Education*, 11(1), 105-138.
- Wu, C., & Kao, H. (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, 351-375. <http://dx.doi.org/10.1007/s10972-005-1105-3>
- Zhang, M., Lundeberg, M. & Eberhardt, J. (2010). Seeing what you normally don't see. *Phi Delta Kappan*, 91(6), 60-65.
- Zeichner, K. & Liston, P.L. (1987). Teaching student teachers to reflect. *Harvard Educational Review*, 57 (1), 23-48.