

ESCalate Research Grant Project Final Report

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Project Title Using video for the identification and assessment of learning in initial teacher education

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Using video for the identification and assessment of learning in initial teacher education

FINAL REPORT





STRANMILLIS UNIVERSITY COLLEGE
A College of Queen's University Belfast



Subject
Centre for
Education
ESCalate

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Summary

This project sought to explore the extent to which video analysis may support the development of student teachers' reflective classroom practice. The project was based on the Year 4 module 'Primary Science Beyond the Classroom', which included a placement in a local primary school. The 18 students, working in pairs, planned, taught and evaluated a cross-curricular science scheme in support of a class visit to the W5 science centre in Belfast. During the teaching phase the student teachers used video cameras to record each other's practice and used this footage to reflect and identify aspects of their practice for development. The students combined recordings from the start and end of their placement and included their own video diaries to produce a final video outlining their professional development. The evaluation of the project was based on data collected via questionnaires, semi-structured interviews and focus group interviews with the students involved.

All of the students reported that video analysis enriched the process of evaluation and personal reflection and was of great support to their professional development. A comparison of student evaluations written before and after watching video recordings of their lessons showed marked differences. Evaluations written after viewing the video recording were much more detailed, focussed more on the pupils and the consequences of the student teachers' actions and contained more evidence for assertions and conclusions. The use of video was found to enhance the level of student reflection for all the students.

In addition to providing the opportunity for a more thorough analysis of the various interactions taking place during a lesson the students found the video encouraged greater collaboration with peers, tutors and teachers. The experience was found to have a long lasting impact on students' reflective practice with evidence of learning being transferred into other teaching situations. All of the students felt that the experience had greatly supported their professional development and would recommend the use of video more extensively throughout their teacher training programme.

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June 2010
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1. Project rationale and aims

The project seeks to explore the effectiveness of using video as a tool to enhance student development within an initial teacher education programme. Despite recent developments in video technology and the decrease in costs of these resources this practice is still not that common. This pilot project will therefore provide an account of how video technology was used with a cohort of student teachers and evaluate how effective it proved to be in developing students' practice. Hopefully this will be of interest to other initial teacher education stakeholders.

Project Aims

- To develop student teachers' classroom teaching skills
- To enhance the level of student teachers' critical reflection
- To evaluate the impact of video analysis on student teachers professional development
- To encourage and facilitate peer evaluation of student teachers
- To identify effective aspects of this approach for all involved in initial teacher education courses

Research questions

The project is founded on and guided by the following questions.

- To what extent does the use of video enhance student teachers' reflective practice?
- What aspects of this use of video support the development of student skills in the process of reflection ?
- What are the possible implications of this project for initial teacher education?

Background and Context

The use of video within initial teacher education has increased in recent years. Research has reported (Barnett et al, 2002; Hung et al 2009; Newton et al, 2010) on the various advantages which the use of video can provide, particularly with respect to the development of the skills of reflection. As the particular form of affordance which video has to offer is very much determined by and is specific to the context in

which it is being used, this project sought to look for evidence of any possible merit in using video within an undergraduate teaching programme. During the course of a previous project ‘Developing the partnership between out of school educational agencies and initial teacher education,’ (available at <http://escalate.ac.uk/downloads/6463.pdf>) student teachers used video recordings of classroom teaching and a visit to a Science Discovery Centre to create a videopaper examining the role of formal and informal science education within the primary curriculum. Although this use of video presents it as more of a product for supporting learning, students reported that the recording, viewing and editing of their classroom practice was extremely beneficial.

This project is set within the curricular context of cross-curricular enquiry-based science. These are aspects of classroom teaching which our student teachers have in the past found quite challenging and which the data obtained from a baseline questionnaire confirm is still the case. The same questionnaire also established that the opportunities which our student teachers get to teach science (enquiry-based or not) during their annual placement can vary greatly from school to school (Figure 1.)

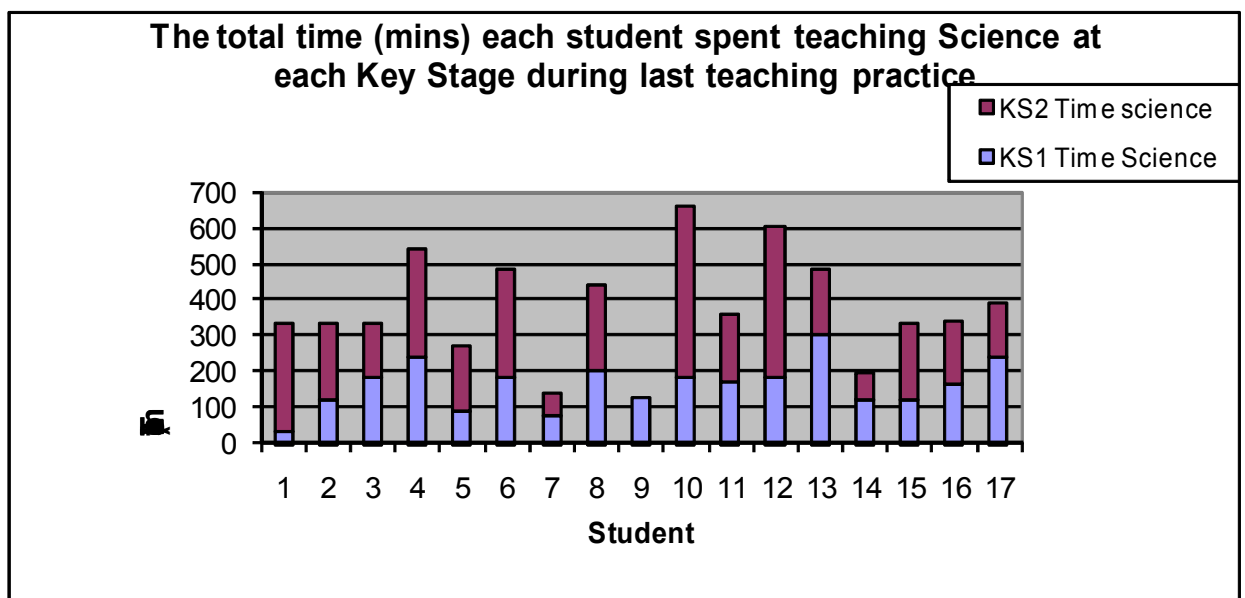


Figure 1.

Pre-project confidence in teaching science (N=18)	
Very confident	3%
Confident	31%
Limited confidence	59%
Not confident	7%

Figure 2.

The data in figure 2 also shows that only about one third of the student teachers felt confident in teaching science.

Bearing in mind that this group of Year 4 students had already completed compulsory modules relating to effectively teaching primary science during their first two years of their four year programme we felt that it would be worth considering a different approach. Given the relatively short time available for this module (10 weeks) and the wide range of competence and confidence across the group , a learner centred approach was felt might best suit the needs of the group.

2. Project calendar

September 2009

- Planning meetings with education staff from W5 Discovery Centre Belfast
- Planning meetings with Principals and teachers from both partner primary schools (Holy Rosary P.S and Gilnahirk P.S. Belfast)

1st October 2009

Introductory seminar to students. Outline course schedule and assessment assignment. Presentation of educational theory underpinning the project

8th October 2009

Student visit to W5 Discovery Centre Belfast. The students were given a tour of centre by the Education Staff and experienced a sample of workshops. The students then had time to explore the exhibits

15th October 2009

Students initial visit to partner school. The students observe their class and agree science topics with host teachers.

22nd October 2009

Student teachers teach first of four lessons in preparation for the class trip to W5

29th October 2009

Student seminar on video recording, video format conversion and editing. Module assignment task discussed.

5th November 2009

Students teach lesson 2. During this lesson the students record samples of each others teaching.

10th November 2009

Holy Rosary P.S and student teachers visit W5

12th November 2009

Gilnahirk P.S and student teachers visit W5

19th November 2009

Students teach lesson 3, the first follow up post-visit lesson.

26th November 2009

Students teach lesson 4 and video record samples of each other's lessons. End of teaching phase.

3rd December 2009

Students select and edit video clips

10th December 2009

Students complete editing, scripting and produce reflective video

10th -17th December

Student evaluation phase. Questionnaires administered to all students. Semi-structured interviews carried out with sample of students.

17th December 2009

Evaluation and Dissemination Seminar at Stranmillis University College Belfast. Student teachers present their work to all host teachers and staff from W5.

January-February 2010

Preliminary analysis of evaluation data.

Submission of proposal for presentation of findings at TEAN annual conference in May 2010.

February 2010

Completion of project interim report

March-April 2010

Evaluation of students' reflection experiences during their school placement.

Completion of project evaluation

May 2010

Presentation of findings at TEAN Annual Conference

June 2010

Completion of full project report

Resources and findings posted on Stranmillis University College website and possibly ESCalate website



Students take part in the 'Forces' workshop at W5

3. Project details

Project Team

Project Leader

Dr John McCullagh- (Department of Education (Primary) Stranmillis University College Belfast)

Ms. Judith Harvey - Education Coordinator at W5 Discovery Centre Belfast

Mr Fergal Corcadden- CETL Coordinator (Stranmillis University College Belfast)

Project Schools

Gilnahirk Primary School Belfast (Principal: Mr. Steven Harrison)

Holy Rosary Primary School Belfast (Principal: Mr Sean Merrick)

Student allocation and topics

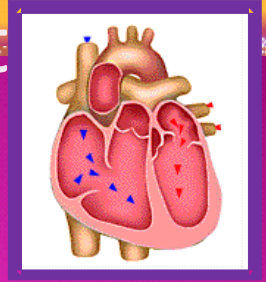
Student	School	Class	Teacher	Topic
Lyndsey	Holy Rosary PS	P3	Miss McGurk	Materials
Emma	Holy Rosary PS	P3	Miss McGurk	Materials
Gemma	Holy Rosary PS	P3	Mrs O'Callaghan	Forces
Serena	Holy Rosary PS	P3	Mrs O'Callaghan	Forces
Emma	Holy Rosary PS	P4	Miss Hyland	Light
Amy	Holy Rosary PS	P4	Miss Hyland	Light
Stuart	Holy Rosary PS	P4	Mr Cahill	Sound
Emma	Holy Rosary PS	P4	Mr Cahill	Sound
Deborah	Gilnahirk PS	P3	Mrs Johnston	Light
Grace	Gilnahirk PS	P3	Mrs Johnston	Light
Sarah	Gilnahirk PS	P3	Mrs Brown	Light
Jenni	Gilnahirk PS	P3	Mrs Brown	Light
Kirsty	Gilnahirk PS	P4	Mrs Storey	Materials
Emma	Gilnahirk PS	P4	Mrs Storey	Materials
Amy	Gilnahirk PS	P5	Mrs Porter	Human Body
Leanne	Gilnahirk PS	P5	Mrs Porter	Human Body
Katherine	Gilnahirk PS	P5	Ms Meneely	Human Body
Steven	Gilnahirk PS	P5	Ms Meneely	Human Body



Lessons were designed to support and then build on the class visit to W5. For example the key concepts relating to 'healthy eating' which were explored in the classroom were developed by role play of a supermarket at W5.



Lesson 4 – The Heart



- Heart Model
- Data logger – recording pulse
- Art – Heart prints

- Demonstration of heart model
- Jim Dine Printing
- Data logger and link to 'Get your Heart going!' (W5)



Student's PowerPoint slide showing how learning was connected between the classroom and W5.

Assignment task

(A)

Theoretical essay on the use of Science Centres within the primary science curriculum

(B)

Supporting scheme of work and lesson plans

Evaluation of how classroom lessons supported the visit to W5

(C) Video reflection

You will produce a short video to demonstrate your ability to evaluate, reflect and develop your classroom teaching. This will be achieved by:

Identify area for development

1. Your partner will record a short section of your second lesson (maximum recording of 10 minutes; if possible break this into a series of shorter clips for easier file management).
2. **Before you watch this video** write a short evaluation **of this part of the lesson**, identifying what you thought were areas of strength and areas for development with respect to your teaching (you may use bullet points). **This should not exceed half a page in length.**
3. Now watch the video clip (as many times as you want), and write another evaluation as before identifying what you thought were areas of strength and areas for development with respect to your teaching (you may use bullet points). **This again should not exceed half a page in length.**

From this video select an aspect of your teaching which you would have identified as an area for possible development. Use the school based work evaluation grid to identify the particular competence corresponding to this aspect of your practice.

Development

Reflect on how you might try and develop this aspect of your teaching. You may wish to discuss this with, tutors, a classroom teacher, peers, or consult books or other resources (Teachers' TV, internet)

5. During the final week of teaching (Lesson 4) repeat the recording process. Record a short section of the lesson which includes the focus for your reflection and development.

Reflection

Produce a short video, about the development of your classroom teaching, as follows.

Video. Edit your video clips to produce a very short final video of maximum length of one or two minutes. This video must include:

- Example(s) of what you considered to be a strength in your first video
- Example(s) of what you identified as an areas for development
- Example(s) from your second video relating to this area for development.

Text.

The text must include;

- Brief description of lesson- topic, learning activity, year group
- The identification of the area(s) of strength included in the video (include competence) linked to these instants by a play button
- The identification of the area(s) for development included in the video (include competence) linked to these instants by a play button
- A very brief account of how you sought to develop your practice
- The identification of evidence for your development within the video



Student teachers recorded each other's lessons.

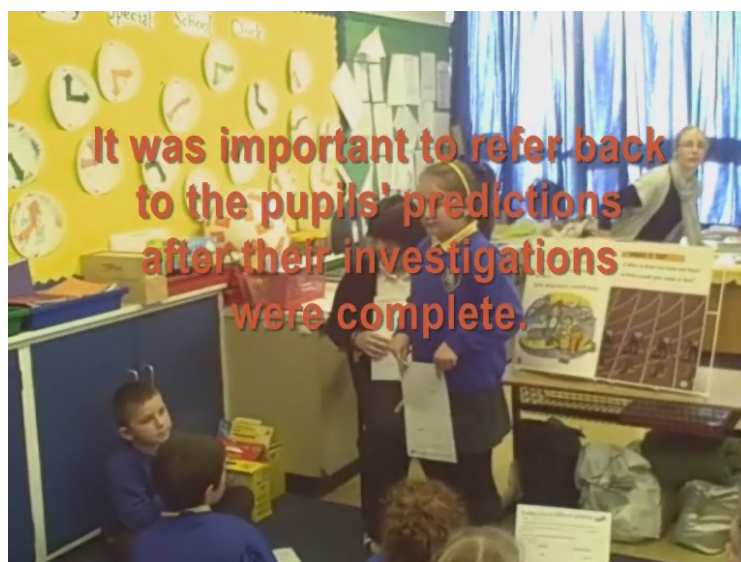
Evaluation of this use of video for reflection

Using your Flip record each others evaluation as follows.

In turn, ask each other the following questions.

1. Has this use of video helped you to reflect on your classroom teaching? How?
2. How did your lesson evaluations before and after watching the video recording of the lesson differ? Where you surprised by this?
3. How do you feel this use of video has developed you as a teacher?

You do not need to convert or edit this evaluation. Just record and submit the video file.



Still images from students' final videos

4. Research methodology

Data was collected by :

- Questionnaires
- Semi-structured interviews
- Analysis of students' post-lesson evaluations
- Student video diary entries

Questionnaires

Questionnaires were administered to all 18 students prior to the project (Baseline analysis) and after immediately after the project. An additional questionnaire was used four months later to explore any possible impact of the project during the course of the students' school placement. The questionnaires included closed and open ended questions.

Semi-structured interviews

Twelve of the students were randomly selected for semi-structured interview. Each interview lasted approximately 30 minutes and explored and developed the data obtained from the questionnaire.

Students' post-lesson evaluations

Each student's pair of post lesson evaluations, written before and after watching the video recording of their lesson, was analysed.

Student diary entries

Throughout the course of the project the students were encouraged to use the Flip cameras to record their thoughts and experiences. This material was sometimes included within the students' final edited video.

Data Analysis

Questionnaires

Tallies of scores relating to closed questions were recorded. Students responses were analysed and recurrent themes noted.

Semi-structured interviews

All interviews were recorded, transcribed and subjected to thematic analysis.

Students' post lesson evaluations

A direct comparison was made of each of the students; written post-lesson evaluations. A list of categories describing the nature of these differences was

initially compiled by each researcher and then discussed before agreeing on a specific list. All differences were then assigned into a specific category by each of the researchers working independently. Initially an agreement was found for 92 % of the differences. Differences were resolved by further discussion and clarification of terms.

Research Ethics

The methods used were all approved by the research ethics committee of the researchers' institution. Parental consent was obtained for the use of video within classroom and the researchers conformed to the Child Protection Policies of both host schools.

5. Project Findings

The project was guided by the following research questions:

1. To what extent does the use of video enhance student teachers' reflective practice?
2. What aspects of this use of video support the development of student skills in the process of reflection ?
3. What are the possible implications of this project for initial teacher education?

1. To what extent does the use of video enhance student teachers' reflective practice?

(a) Data from the comparison of lesson evaluations

There was found to be a marked difference in the content of post-lesson evaluations written before and after watching the video recording. The nature of the differences and the percentage of student evaluations which differed in this way are shown in Table 1 (below).

The evaluations written after watching the video recording were generally more detailed, included a greater number of observations, focussed more on pupils than on the student teachers' instruction and included fewer unsubstantiated claims or assertions. These post video watching evaluations often corrected, qualified or strengthened comments made in the first evaluation. Evaluations written after viewing the video made more reference to future teaching intentions.

How did evaluations differ?	% Students
More observations	100
Contained less recount of the lesson	100
More specific judgements	100
More evidenced based assertions	100
Less unsubstantiated claims	100
More connection of teacher action to pupil learning or behaviour	70
Greater focus on pupils	67
More stated intentions for modified approaches in future lessons	56
More reference to physical aspects of presentation	44
Re-evaluation/ modification of assertion in previous evaluation	39
Other differences	33

Table 1. The difference between evaluations written before and after watching the video recording of the lesson.

Extracts from post lesson evaluations

Change in thinking about the lesson.

Before- I feel it was a bit rushed at the end but I feel the learning objectives were met and was happy they knew the difference between the words clear transparent and opaque.

After- When I watched the video I could really see how my questions only included five pupils. I could see they looked distracted and I had not got everyone's attention for this very important bit. I need to manage my time better and think how to involve them more in the plenary

Strengthening of student opinion

Before- I feel the discussion was successful but might need to involve more of the class

After- After watching the video I am certain I must insure all children are involved in the discussion and think of ways of doing this.

Before-my explanations of the activities could be improved, in future I aim to improve this aspect of my teaching.

After- From watching the video I was clearly able to see that my although my explanations of the activities were effective I could have furthered this by modeling what I wanted the children to do and use a picture to show them what I wanted them to do.

Clearer intention for future practice

Before- The questions I was asking I feel were not clear enough leading pupils to answers which were off topic and not what was needed in the lesson

After-I could really see how I was unable to make use of all the various ideas, one such incident when a pupil gave what could be deemed as an incorrect answer was particularly alarming. Answers which were deemed as 'not what I was looking for' should be dealt with in a more positive manner, this would increase classroom participation and pupils would be encouraged to try without fear of incorrect answers.

Does use of video enhance level of reflection?

Each of the additional 'reflective entities' resulting from viewing the video recording where assigned to a particular level of reflection using the model of Larivee (2008). Larivee (2008) has used the various definitions and perspectives on reflection to identify four levels of reflection with each level described by a set of criteria. This instrument has been designed for teachers to assess their own and/others practice.

- Level 1 Pre-reflection (Limited reflection)
- Level 2 Surface Reflection
- Level 3 Pedagogical Reflection
- Level 4 Critical Reflection

This model was modified as follows:

- Reduce level descriptors from 14 to 4
- Exclude Level 4 (Critical Reflection) as it includes judgements about the content of the curriculum and its wider sociological context of learning, factors which although are important are factors which the student teachers have little control over and may be sensitive to the context of their school placement.

(Modify to exclude 'critical reflection' - consideration of Curriculum content and values beyond student control)

Recount
No evidences for assertions
Focus on management, control, compliance
Fails to connect teaching action to pupil learning/behaviour
Surface Reflection (Level 2)
Provides evidence for assertion
Adjusts teaching practices to current situation
Reacts to pupils' responses differentially
Limits analysis to technical techniques
Pedagogical Reflection (Level 3)
Analyses relationship between teaching practices and pupil learning
Strives to enhance learning for all students
Identifies alternative ways of representing ideas and concepts to pupils
Acknowledges what pupils bring to the lesson

Data concurs with Larivee's view that *'even novice teachers can deepen their level of reflection with powerful facilitation and mediation within an emotionally supportive climate,' making use of 'multifaceted and strategically constructed interventions.'*

Comparison of the evaluations from before and after viewing identified:

61 additional reflective entities.

Of these;

21 (34%) could be assigned to **Level 2 (Surface Reflection)**

40 (66%) at **Level 3 (Pedagogical Reflection).**

(b) Data from post project questionnaire

There was strong agreement between the differences detected in evaluations written before and after viewing the video and the differences reported by the students themselves in the post-project questionnaire. The students reported that watching the video altered their evaluations in the following ways. (The value is the percentage of students making this response.)

- Video provides more detail (100%)
- Video allows you to focus more on the actions of pupils (80%)
- Video provides a pupils' view of the lesson (60%)
- Video provides the opportunity to re-evaluate your opinions on the lesson (40%)
- Video confirms what you had originally thought about the lesson (30%)
- Video identifies physical aspects of your teaching (voice, movement, body language (28%)

2. What aspects of this use of video support the development of students' skills in the process of reflection?

Video replay

All of the students reported that watching the video recording of their lesson very useful for the following reasons:

- Provides the opportunity to observe your personal traits
- Presents the reality of the lesson not what you suspect
- Allows the lesson to be observed from pupils' perspective
- The more you watch the video the more you see!
- Reassurance! The lesson really was OK/good.
- Video can be shared with tutor/peer-starting point for action
- Can be watched when you are ready. Calm cool and collected
- Can confirm tutors comments which you did not believe

Follow up video

The task of identifying areas for development and the process of video recording a subsequent lesson was considered to be very useful by all of the students for the following reasons:

- You got a chance to try out your new approaches
- You could see for yourself if you had progressed and if it made a difference -test the theory!
- You wanted the video to show improvement so you had to have a go
- Focusing on only one aspect supported developed- not overwhelmed
- The video task supported collaboration. Viewing can be a passive and solitary activity.

Video editing

The process of viewing, identifying and editing particular clips for production of a final video was considered to very useful by all of the students for the following reasons:

- The video allowed the middle research period to be identified and connected to subsequent actions
- The editing made you have to watch much more closely
- You had to know exactly what clips to select- in depth analysis of classroom interactions
- The video presented the connection of theory to practice in real context-situated learning
- Videos could be swapped with peers- collaborative learning

Longer term benefits

Data obtained from a questionnaire administered five months after the project indicate that the students had benefitted from this experience and felt better equipped for their seven week block of school placement. All 14 respondents (78% of the project group) reported that the experience had supported their reflections during teaching practice.

“ I felt more aware of what to look out for in the lesson; what I might be missing. It really made me think more deeply.”

All 14 respondents felt that their level of practice had been increased.

“During teaching practice I was more careful to ensure I planned out how my questions would direct the learning. It really helped!”

3. What are the possible implications for initial teacher education?

Post-project questionnaires and the semi-structured interviews made it very clear that students would welcome the opportunity to use videos to support the development of reflective practice more widely throughout their initial teacher education programme. The following were the key advantages and issues cited by the students:

- Video should be used in other courses, particularly where the development of a quite specific form of teaching is the focus
- Video should be used from year 1- although a significant minority of students expressed concerns that perhaps beginning student teachers may possibly be overwhelmed.
- Video would be useful way for students to get a sense of their development and progression throughout the four years of their course.
- Video material would be useful for tutors to reach a greater shared consensus regarding standards and assessment.
- Video material could be exchanged between students and would encourage collaborative learning.

6. Discussion and Conclusion

We feel that the results of this project make a very strong case for the use of video to support the development of student teachers reflective practice and concur with previous research (Barnett et al, 2002; Hung et al 2009; Newton et al, 2010). The various forms of data explicitly identify progression in student teachers' levels of reflection and begin to describe and identify the particular merits of this approach. Given the fact that the affordances which video technology can provide are indeed equally appropriate to the development of reflection among qualified teachers, it is worth exploring how these findings may inform future and wider practice.

A clear definition of what actually constitutes 'reflection' or 'reflective practice' is essential if we are to consider how it may be encouraged, developed and assessed among our student teachers. Rodgers (2002) revisits the founding principles of Dewey (1933) to provide a description of reflection and identifies four key characteristics of reflective practice. For each of these characteristics we suggest how the use of video may support it.

Reflection (Rodgers, 2002).....

1. *...is a meaning-making process which moves a learner from one experience into the next and deepens the understanding of the relationships and connections to other experiences and ideas.*

Video allows the ever changing, dynamic and complex activity of the classroom to be slowed down, reviewed and all possible meanings and potential contradictions to be identified, considered and addressed in future practice.

2. *...is a systematic, rigorous disciplined way of thinking comprising different stages and levels of interpretation, followed by the synthesis of problems and testing of possible solutions.*

The use of video aids the diagnosis of possible problems by providing an accurate description of classroom interactions and enables a comparison to be made of student teachers' immediate 'reactions' to the more considered 'responses'. By its very nature it ensures time for reflection and requires the re-evaluation of follow-up actions.

3. *...needs to happen in interaction with other people as this clarifies and reveals strengths and weakness in one's thinking.*

The viewing of a recorded lesson can enrich the dialogue between student and tutor as the shared reality of the lesson give way to the memory based personal interpretation. Viewing with peers allows for a potentially less judgemental perspective to be exchanged, discussed and defended, hence developing and refining initial thought. Personal viewing also enhances the internal dialogue which is thought and helps distil the reality from the perceived.

4. ...requires attitudes that value one's personal development and intellectual growth.

Motivation, the key aspect of any process of development or change can be compromised when progress or improvement is not directly observable or identified. The immediate feedback of enhanced levels of pupil learning can sustain students through the challenging process of reflection and facilitate personal goal setting.

The role of video within the 'cycle of reflection'

Rogers (2002) also reminds us of the importance which Dewey placed on 'action' within the process of reflection and that ('...the action that one does take is not definitive. That is, it is an experiment, a testing of one's theories.' p855). This cyclical view of reflection is considered by Pollard (2005) to follow a number of specific stages. Figure 2. Shows each of the stages, Plan, Act, Collect Evidence, Analyse Evidence, and Reflect together with how we suggest the particular activity can be supported by the use of video.

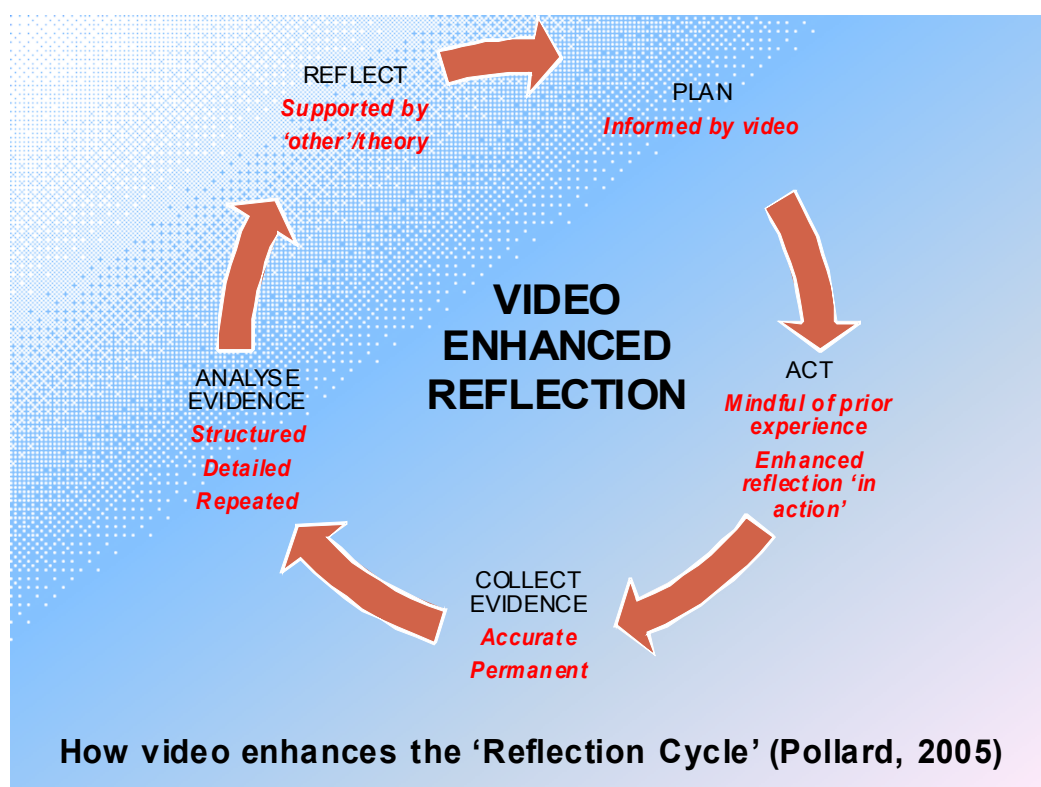


Figure 2.

The findings of this project also shed some light onto the question of how the actual way in which we use video recording with our student teachers may influence the learning experience. It would appear that although there is much to be learned by a

student from simply watching a video recording of their teaching, the inclusion of a video editing task and / or the requirement of teaching and recording a follow-up lesson adds much to the learning dynamic. Simply watching a video, even of one's own teaching can be a passive exercise and is rooted in the past. The challenge of selecting and editing video clips engages the student in an active interpretation of the lesson and requires a much closer watching than before. The opportunity to consult with tutors, teachers and revisit literature has now much more meaning and purpose now that the context has been selected and described. The full cycle of reflective practice is then completed by the follow-up lesson and the analysis and testing of new approaches. Motivation is sustained by the learner-centred nature of a process where any signs of progress and student learning can be easily identified.

We are all too aware however that the use of video within ITE is not without its challenges. Strong partnership with host schools is essential given the use of video can be a sensitive issue. The students themselves can be initially apprehensive so a gentle introduction into video recording within College can both attend technical issues of getting the best out of the camera and get the students over the initial shock of seeing themselves on screen. The process greatly develops extremely useful and transferable ICT skills as they have to come to terms with issues such as the managing and format of video files, video editing, annotating and publishing product video. In conclusion we would strongly recommend this type of approach within all initial teacher education programmes. It can effectively enhance student learning as described by this student's quote;

"The video identifies what went right , what when wrong, when, how, and with whom, and through analyzing it you can figure out why it happened and how to develop the capabilities to prevent it happen again."

7. Dissemination of findings

The findings and outcomes of the project take the form of:

- Project Final Report (ESCalate website)
- Examples of lessons, teaching resources and classroom activities which support a visit to the W5 Discovery Centre (ESCalate website)
- The presentation 'Student teachers' perspectives on the use of video analysis as a means to enrich and enhance the process of reflection' was made at the TEAN annual conference at Glasgow Caledonian University on 21st May 2010
- The presentation ' Seeing is believing: the use of video to support student reflection' will be presented at the IASSEE (Irish Association of Social Scientific and Environmental Education) at St Mary's University College Belfast on 23rd June 2010
- Project findings to be presented at Research Seminar during academic year 2010-2011 at Stranmillis University College.
- Research paper based on the findings of this project to be completed and submitted to the journal *Technology, Pedagogy and Education*

References

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APPENDICES

Lesson Evaluation before watching video recording

Primary Science Beyond the Classroom

Lesson Evaluation [prior to viewing recording.] Lesson Two- 'Shadows'.

Note: Due to the nature of our class and the additional time we have been gratefully allocated, the structure of our lesson may differ from that which was suggested. Rather than one student lead the introduction, the other the conclusion and the main activity be shared, instead, as we had an hour and twenty minutes and as the class is very easily unfocused, we decided to experiment with a few variations of team teaching to encourage concentration and enthusiasm among the class. In the first lesson we tried one student leading the introduction, the other the conclusion and an equal effort in the main activity. However, we found the pupils tired towards the end of the lesson. To improve on this we decided to break the lesson into four segments and switch the lead teacher throughout. In breaking the lesson down we aimed to retain the pupil's focus, keeping them interested and enthusiastic through the whole hour and twenty minutes. While my team teacher lead the first and third part (the introduction and activity), I lead the second (the development of the topic) and the conclusion. We felt this was very successful. Due to this adapted pattern I will be evaluating both the development and the conclusion.

Development [15mins]:

The development was aimed to link the pupil's gained knowledge of light, from the previous lesson, into the topic area of shadows. The pupils were encouraged to apply their thinking skills to predict if we can get light to bend. This was achieved through encouraging the pupils to predict where a torch's light would shine. By applying active pupil participation through predicting and testing where the light would shine, the pupils were successful engaged. Through reflecting on the experiment and through scaffold questioning, as well as previously gained knowledge on reflection, the pupils reached their own conclusion that light could not bend but could be reflected in a different direction. I feel this was highly successful. The pupils enjoyed the challenge and the images used in the problem solving were very clear and a helpful stimulus. By challenging the pupils to point to key words on the images, it increased key word recognition, evidenced previous knowledge of the first lesson, and again allowed for active participation which is crucial in a class with poor concentration skills. I was very pleased at the pupils' ability to further apply their previous knowledge by correctly choosing between "bright, dull, dim and dark" to describe a created shadow. I am very pleased at successfully leading the pupils to connect these two pieces of knowledge to understand that light cannot bend around objects, that they therefore block the light and a dark shape without light, (a shadow) is then created. In general I am pleased with this section of the lesson. It was very interactive, promoted independent and connective thinking skills and provided questioning at a level for both lower and higher ability. It could have been further developed by making a light reflect round the corner, as depicted in the IWB image, or perhaps by making a trail of reflected light across the length of the classroom. To further develop the lesson I could question the pupils on what things they think bend and what don't. This would have further grounded their understanding that light, along with other things, cannot bend. The class were well behaved throughout and were very responsive to the shadow puppet video which motivated them in the following shadow creating activity.

By using a battery powered candle, that the class responded well to in the previous lesson, as a reward for the best table, the pupil's behavior was well managed.

Conclusion [10mins]:

I do not feel the conclusion was to the same standard as the development due to feeling pressed for time and the pupil's concentration wavering. However, the pupil's remained receptive and appropriately challenged. I feel I didn't take note of the pupil's behavior, of who was listening and who was not and was perhaps too focused on presenting the material in time. The pupils could have been provided more opportunities to actively participate, even in pressing the play and replay buttons on the animation, or pointing to the shadows, which may have omitted some restlessness. While there was questioning, I felt there could have been more direct questions to lead the pupils to their own conclusions as was done in the development. For example, why the shadows were getting longer and shorter? Was the light source moving or the object? However I avoided these questions as I wasn't aware of the pupil's previous knowledge of the sun clock, if they realised that the sun moves around the earth. While these animations used were very clear, stimulating and helpful, to improve this conclusion, additional photographs of shadows from trees, people and buildings would have benefitted the lower ability pupils who perhaps needed further reinforcement. However, I do feel that the pupils enjoyed imagining they were outside on a sunny day looking for shadows. They were able to give good feedback on things that would make shadows, the sun's role in this as a light source, and apply their newly gained knowledge in a completely different context, which was encouraging. By closing with having the pupils present and read out their work, I was able to informally assess not only the pupils learning but also my own teaching. There are small things like talking too much or walking in front of the screen too much and the pupil's attention which I feel uneasy about and look forward to the recorded video revealing.

Evaluation Questionnaire

Evaluation of video reflection

1. Do you feel the use of video has developed your teaching? If so how?

I feel that, by using video technology to reflect on my teaching, I have gained a greater confidence in my teaching ability. The use of both audio and visual feedback allowed me to reflect on my presence and impact in the classroom holistically. Aspects such as my body language, interaction with the pupils and classroom organisation were most benefited.

The use of the video camera has also allowed me to place myself in the classroom, taking on the role of the learner. Being able to experience my approach from a pupil's perspective highlighted new areas of development, mainly my approach to pupil responses, answers and feedback. I will be taking this experience with me as I continue into professional development through remembering to put myself in the place of the child.

2. You were required to evaluate a part of your lesson before and after watching the video. Did watching the video alter your evaluation? If so, how?

The finer details the lesson, which would otherwise be unnoticed, were brought into light. For example, I said, "yep" a lot and at times. I also looked tense on the video which may have reflected onto the pupils and created an un-relaxed learning atmosphere. In the future I will be conscious of these details and ensure my body language is relaxed and confident.

3. What aspects of your practice (for example, planning, introduction, classroom management, questioning, plenary/conclusion etc) do you feel the use of video may have developed the most and how?

The video has developed my questioning. I felt the questions I asked were restricted, closed, voting style questioning as, "can light shine around a corner?" and, "is this a light source?". Even in asking what a shadow was I placed restrictions through presenting options to choose from. However, the video revealed I did include some problem solving and opinion based questions such as, "what things outside make a shadow?", to which the pupils responded really well to. Having seen this I realised I had underestimated certain pupils cognitive ability, perhaps due to their poor literacy skills.

4. Did you find the exercise of watching your partners finished video useful in helping to develop your future practice? How?

Yes, through watching my partner's video I was able to witness a peer's, at the same stage of professional development, approach to teaching. Team teaching was highly beneficial for me in showing me that my peers share the same initial concerns and uncertainties upon entering a classroom as myself. Viewing another video was specifically beneficial as I was able to see a different approach to teaching, mainly their class organisation and use of language.

5. Do you think the opportunity to watch other students' videos could be useful? Why?

Rather than being isolated in their placement experience, having witnessed other peers teaching, students would develop a more flexible, open minded and experimental approach.

6. Do you think video might be used throughout the four years of your degree to develop your teaching? If so please outline how.

Yes, I feel that, although daunting, a video evaluation during students first placement would improve their awareness of their presence in the classroom , developing areas such as voice projection and body language and generally taking control of the class and making their presence known . All of which are a focus in first year. By video recording students in placement each year, not only will their professional reflection become highly developed but also, an overall record of their progress, achievements and strengths would also be created.

7. Any other comments or observations on the use of video.

The video caused no disruption to the lesson. It was also useful in coming into an unfamiliar class as through watching the video it was evidential which pupils had poor concentration, were disruptive, liked to answer questions, sought continual assistance from their neighbour or enjoyed being helpful.

Thank you for completing this evaluation

Overall experience of module

Peer Teaching Reflection:

'Peer teaching involves students learning from and with each other in ways which are mutually beneficial and involve sharing knowledge, ideas and experience between participants. The emphasis is on the learning process, including the emotional support that learners offer each other, as much as the learning itself.'

Boud, Cohen and Sampson (2001)

- ❖ We found team teaching beneficial as you are able to see each other's different teaching style/ strategies which you can reflect on and learn from.
- ❖ Preparation of resources and organisation of the lessons as a whole also proved to be much easier when working as a team.

- More confidence in teaching Science.
- Extremely enjoyable
- Video of lessons allowed a more in depth reflection of teaching than written evaluations.

Student's Powerpoint slide evaluating the learning experience.

