

**Putting the Virtual Pen to Paper
Can Asynchronous Computer Mediated
Communications facilitate collaborative teacher
reflection and facilitate change in practice?**

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Declaration

I declare that the work described in this dissertation is, except where otherwise stated, entirely my own work and has not been submitted as an exercise for a degree at this or any other university.

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15th May 2007

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Abstract

Dewey (1910) introduced the concept of reflection as a process, Stenhouse (1975) and Schon (1983) explored the theory of reflection in action, that practices can be changed in light of reflection. Hatton and Smith (1995) indicated that engaging with another person in a way that encourages talking and questioning helped the reflective process in that it placed the teacher in a safe environment. This is especially important in this study, as Brookfield (2002) found, that in teaching there is a feeling of vulnerability, a fear of being ‘found out’ with no safe place to air one’s uncertainties. Maher and Jacob (2006) established that collaboration through Computer Mediated Communications provided emotional support between peers. Boreham (2000) and Head (2003) also argued that collaboration leads to knowledge. However, Elbaz, (1988) and McNamara, (1990) identified the problem, that teaching is seen about the immediate present and instant action, while reflecting is perceived as a more academic pursuit. One method of overcoming this problem is through action research, in that it uses reflection to change practice, thus providing a vehicle for the reflective process.

This study uses the website ‘*Teach to ReflectReflect to Teach*’ built and designed specifically for this study, to facilitate collaborative reflective and scaffold an action research process.

Four teachers from one school used the artefact over a twelve week period. They entered their reflections, discussed their action decision on-line, implemented that action decision in their own classrooms, then reflected on the change in practice on the website. The website facilitated collaboration by encouraging the participants to view each others reflections and then comment on them.

The on-line artefact collected the reflections and action decisions. A questionnaire, focus-group interview and semi-structured interviews provided the rest of the data. The data was analysed to find out the level and quantity of individual and collaborative reflections and how these reflections contributed to a change in practice and how the artefact facilitated the whole process

Evaluation of the data showed that the quality of the reflections was high, but the quantity low. The artefact permitted the initial stage of collaboration, and data suggested that face-to-face collaboration could not take the place of on-line collaboration. Overall, the participants found the process enjoyable and were very positive about the design of the artefact; it was easy to navigate and it elicited a high level of reflection, but that prioritising their time to reflect was a major problem.

Chapter 1 – Introduction

Background

‘To understand is hard. Once one understands, action is easy’ (Sun Yat Sen, 1866-1925).

Fullan and Hargreaves (1991) stress that there is not enough opportunity or encouragement for teachers to work and learn together. However, Munn, Johnston and Chalmers (1992) believe that actions, taken by teachers is academic unless these actions can be embedded in the real context of their classrooms. The objective of this study is to encourage the participants to critically and collaboratively reflect using the on-line website, these reflections should highlight everyday issues which informs how they are to make changes in their teaching practice. By providing them with the technology, the teachers in this study can research their own practice and own the research.

Implementation and Evaluation

The research process is embedded in the artefact – an interactive website titled ‘*Teach to Reflect Reflect to Teach*’ . Four teachers from one school used the artefact over a twelve week period. They entered their reflections, discussed their action decision on-line, implemented that action decision in their own classrooms, then, reflected on the change in practice on the website. The website facilitated collaboration by encouraging the participants to view each others reflections and then comment on them.

Research Questions

1. What was the level and depth of reflection done by participants on-line and did these reflections highlight specific issues?
2. How did the artefact facilitate the process of reflection?

3. What was the level and depth of on-line collaboration between participants and how did the artefact facilitate collaboration?
4. Did the reflections feed into the action decision and what course of action did they individually decide upon?
5. Did that action contribute to a change in practice?
6. How did the artefact contribute to the action research process?
7. Is this a viable means of facilitating teacher reflection for future use?

Limitations

The study was implemented over twelve weeks. To fully implement the action research process more time was needed.

Thesis Roadmap

Chapter 2

The literature review investigates the literature relevant to this study and to the design of the artifact.

Chapter 3

The Design chapter outlines how the design of the artifact reflects the literature, how a user would navigate the artifact. It also discusses how the methodology of the action research study is embedded in the artifact and how its design aims to scaffold the research process.

Chapter 4

The Methodology Chapter explores the strategies employed to answer the research question. The data collection methods are outlined and justified and the implementation of this process is also described.

Chapter 5

The Findings and Discussions Chapter will outline the findings from the action research process using the information from the on-line data collection facility, questionnaire, focus-group interview and semi-structured interviews. This chapter also analyses the findings in the light of the literature and research question.

Chapter 6

This Conclusion Chapter provides an overview of the findings and their relevance to the research question. It also suggests future study in this area and uses for the artefact in those studies.

Chapter 2 – Literature Review

‘The final reality of educational science is not found in books, nor in the classrooms where it is taught, but in the *minds* of those engaged in directing educational activities’ (Dewey, 1929, p.32).

Introduction

Conventional research in education had been dominated by the academic researcher going into schools, collecting data and reporting without regard to the knowledge or experience of the teachers (Meyer Reimer and Bruce, 1993). Few teachers recognise the relationship between research and their lives as teachers and teacher education does not seem to offer teachers frames for examining their own teaching in light of their classroom practice (Ruddick, 1989, Allison, 1995, Quinn, 2001). Martin (2001) suggests that there is no practice green for teachers, that each class period is the real thing, with any apparent failure likely to militate against future success. Collaborative reflection can offer teachers the means to examine their own teaching and Computer Mediated Communications the scaffold for those reflections.

Reflection

Dewey (1910) in *How We Think* introduced the concept of reflection as a process, thinking about something in order to resolve an issue. Reflective thinking usually addresses practical problems, allowing for doubt, in the process finding possible solutions (Hatton and Smith, 1995). Dewey also spoke of ‘reflective action’, that the solutions found through the reflective process would result in some action. A broad range of literature has appeared in relation to reflective practice in education. Dewey (1933), Habermas (1971), Schon (1983), Kolb (1984), Hatton and Smith (1993), Loughran (1996), Seibert and Daudelin (1999), Moon (1999, 2004).

Reflection facilitates the analysis of multiple, repeated observations and interactions, it is the analysis of these reflections that will enable the teacher to detect patterns that will then lead to knowledge, this knowledge can then lead to change in practice (McAlpine and Weston C, 2000). Reflection, as it applies to teaching, includes sharing your own ideas, listening to colleagues reactions to your ideas and trying to integrate them into your thinking (Zeichner and Liston, 1996). That teachers reflect and think critically about their practice in their specific contexts, they can then take risks based on informed decisions prompted by reflection (Walkington, J. et al., 2001, p. 346).

Dewey (1933) identified three attitudes imperative for reflective practice, to be prepared to listen to more sides than one, even if they contradict our own beliefs. The second attitude is responsibility, where one carefully considers the consequences of an action, the third to move beyond the abstract and put ideas into practice. Rodgers (2001) believes that the process of reflection should be seen as continuous, and that continuous reflection leads to new understandings .

However, looking at one's beliefs and work practices and learn new ways of acting and seeing is difficult. Minsky, 1975, Schon, 1983, introduced the concept of 'frame'. "As teachers frame the problem of the situation, they determine the features to which they will attend, the order they will attempt to impose on the situation, the directions in which they will try to change it. In this process they identify both the ends to be sought and the means to be employed" (Schon ,1983 p. 165). This is likely to be achieved only when teachers critically reflect on what their actions and the consequences of these actions. The frames that a teacher brings to the classroom, allows them to interpret what is going on, both expected and unexpected (Barnes D., 1992). The process of writing down and thinking about one's own frames, often prompts memories of contrasting ones, it can also highlight the 'ridiculously high or low standards to which we hold ourselves and this is often enough to jar us loose from them' (Rudolf, Taylor and Foldy, 2001).

In terms of analysing the nature of the reflection, there must be a reflective process. These have been identified as: **descriptive** – analysing ones performance in the professional role and giving reasons for actions taken. **Dialogic** – hearing one’s own voice (alone or with another) exploring alternative ways to solve problems in a professional situation. **Critical** – thinking about the effects of one’s actions upon others, taking account of social, political and or cultural forces (Fuller, 1970, Hatton and Smith, 1993, Valli, 1992).

Heron J. (1985, p. 128)) devised a process called ‘co-operative inquiry’ in which reflection becomes part of an experiential learning cycle. By incorporating reflection as part of a cycle of experience, and going round the cycle of experience several times, the validity of the reflection is tested and retested against the content of the experience and action. In this way, the reflection in the early stages is divergent, exploring many issues, but as each cycle moves into the next one, the reflection becomes more refined and a process of convergence occurs. Redmond (2006) also develops this idea through her learning model.

Barriers to reflection

Firstly, reflection is not generally associated with working as a teacher. Teaching is seen about the immediate present and instant action, while reflecting is perceived as a more academic pursuit (Elbaz, 1988, McNamara, 1990 cited in Hatton and Smith, 1995).

Second, is time and opportunity, the daily rhythms of schools typically provide little time for teachers to talk and reflect and that these are imperatives in order to foster effective reflection. (McNamara, 1990, Noffke and Brennan 1988, Cochran Smith, 1995). Thirdly, change involves learning to do something new, this can cause fear and anxiousness even for an experienced teacher, causing some to shy away from the challenge (Rosenholz, 1991) and finally Callan (1998) believes that curriculum overload impinges on time for reflection.

There are a number of suggested ways of overcoming these problems: By making the activity more manageable (Elliott (1991), by making the reflective process meaningful to them, practice based (Hopkins, 1993, Moon 2004).

By providing a support structure to encourage reflection such as Gibbs (1988) reflective cycle (Reid, 1994, Moon, 1999), using on-line peer dialogue journaling, personal journals, portfolios, case studies, and autobiographies (Roskos et al., 2001) and by using collaborative approaches to reflection (Carr and Kemmis, 1986).

Collaboration

Vygotsky (1978) believed that humans engage in social interactions and they create understandings to and from that context. Teachers who have the support of groups of their peers are better able to focus on their teaching practice and their students rather than on their own personal concerns (Thies-Sprinthall and Gerler, 1990). When teachers interact, engage in conversation, all provoke an understanding of new positions. They make sense of their situation through a process of selection and rejection (Potter, 1998).

Roskos et al. (2001) stress, that teachers have a tendency to treat reflection as a personal and private act. Yet this contradicts the social nature of learning. Many studies highlight the importance of collaboration for fostering reflective thinking among teachers. That peer interaction appears to support teachers professional development (Putnam & Borko, 1997, 2000; Zeichner and Liston, 1996).

Teacher isolation at all stages of the career is well documented (Goodlad, 1984, Liberman and Miller, 1984, Lortie, 1975). The physical and organisational structure of schools isolate teachers from one another (Eisner 1998). There is a feeling of vulnerability, a fear of being 'found out' with no safe place to air one's uncertainties (Brookfield S, 2002).

Darling-Hammond (1998) identifies collaboration as a process whereby teachers are talking about their practices, improving their practices in light of their discussions.. Dixon (2000, p. 5-6) believes that sharing ideas creates a learning culture. Hatton and Smith (1995) indicated that engaging with another person in a way that encourages talking with and questioning helped the reflective process in that it places the learner in a safe environment.

Maher and Jacob (2006) found in their study that collaboration through Computer Mediated Communications provided emotional support between peers and helped each other reflect upon issues in ways that might lead to new insights. Boreham (2000) and Head (2003) also argued that collaboration leads to knowledge which is more the sum of the combined efforts of all involved.

Head (2003) stressed that collaboration is complex and can be difficult and that true collaboration can only take place when misunderstandings and misconceptions are addressed. Brownell et al. (2006) discovered that the literature provided many examples of how collaboration results in positive changes for teachers generally, but not much is known about how individual teachers respond to collaboration. Callan (2006) points out that collaborative engagements have not been part of the traditions of second-level schools in Ireland, that some teachers felt their professional autonomy was being challenged. It was only through addressing real issues that teachers found the collaboration rewarding.

Action Research

Action research became a vehicle for teacher research in 1960's. Carr and Kemmis (1986) viewed it as a form of self-reflective enquiry undertaken in an educational situation in order to improve the participants understanding of their practices and in doing so improve those practices. It uses reflection to change practice. It involved a spiraling series of four steps - plan, act, observe, and reflect, these spirals occur naturally in the work of teachers. Schmuck R, (1997) believed that action research studies a real school situation, offering a means of changing from current practice towards better practice.

Sagor (2005) stressed that no two classrooms, students or schools ever respond in the same way. Action research gives ownership to the teachers. (Bassegy, 1995, Hatton and Smith, 1995, Carr and Kemmis,1991). It not only informs their practice, but also helps teachers to see that they have the knowledge that be drawn upon to improve their practice (Tabachnick, B and Zeichner, K., 1999).

In the area of teacher isolation, action research is often done in collaboration with others. In fact, some have included collaboration as a necessary part of action research's definition (e.g., Carr and Kemmis, 1986, Tabachnik and Zeichner, 1994, McNiff, 2002).

Oja and Smulyan (1989, p. 15) had found that 'teachers who participate in action research projects became more flexible in their thinking, more receptive to new ideas, and more able to solve problems as they arise'. Kincheloe (2003) believes that through action research teachers examine contextual factors and examine their classroom practices in relation to them. It is a common-sense explanation of what good teachers do.

Technology as a scaffold for the collaborative reflective process

Technology can be a very useful tool in developing a collaborative reflective process as knowing what cues to evaluate and reflect on are the critical skills in reflection (McAlpine and Weston C, 2000). One potentially useful tool for supporting teacher peer interaction is Computer Mediated Communications (CMC), a term which can refer to computer conferencing, bulletin boards, computer assisted instruction, or email (Marx, Blumenfeld, Krajcik and Soloway, 1998).

Providing structural supports within the CMC application has been found to increase the participant's ability to engage in higher order cognitive activities (Fretz et al. 2002). CMC has another benefit, as, Hawkes and Dennis (2003) noted that due to time constraints on teachers, there is little time for sustained collaborative reflection. CMC gives them an alternative forum to communicate in. Hawkes and Romiszowski (2001) also found that the storage capacity of the technology eliminated the tedium of note taking and allowed users to retrieve segments of a previous discussion and reflect on them.

Research on the use of asynchronous CMC to support teacher reflection is only beginning to be compiled (Maher and Jacob, 2006). They discovered in their 2006 study that there were no studies examining the use of peer interaction through asynchronous CMC, more broadly, to support teachers individual action research studies, each of which had a different focus (p. 130).

However, Gilbert and Dabbagh (2005) and Maher and Jacob (2006) found that structural guidance can increase the extent and level of meaningful CMC discourse, while Angeli, Valanides and Bonk (2003) stressed that the lack of scaffolding may contribute to a decrease in the extent and level of quality discourse and critical-thinking skills observed in CMC. This application also provides the structure for action research spirals of reflection.

Using CMC in the area of classroom practice, found that teachers did provide support to one another and shared information (Riding, 2001, Selwyn, 2000). Hawkes and Romiszowski (2001) also concluded that CMC facilitated more reflective discourse than in face-to-face interactions, that while the computer-mediated teacher dialogue was less interactive, it was significantly more reflective than face-to-face discourse.

CMC also supports teacher's learning by encouraging peers to journal, providing emotional support, offering substantive help and by thinking reflectively about issues and suggesting alternative ways that their peers might look at and reflect upon such issues (p.138). Hawkes and Romiszowski (2001) found that self disclosure appeared to be the catalyst for many reflective contributions to on-line discourse, embedding teacher learning in real experiences.

Problems associated with CMC

The three main areas where problems seemed to occur were:

- Familiarity with the technology
- Building a virtual community versus a face to face community (Hough et al., 2004)
- Using technology for an intimate level of discussion and the disclosure on a public forum (Hawkes and Romiszowski, 2001).

Hough et al. (2004) found that in order to build a virtual collaborative environment, the participants needed to know each other so that they could link comments with faces and personalities. They suggest that a community needs to be formed in a face-to-face environment before moving into a virtual environment.

Hawkes and Romiszowski (2001) discuss the ‘climate of interaction’, the extent to which teachers in the project feel comfortable in the open exchange of ideas, opinions and feelings over the medium. By introducing a gradual introduction to the CMC environment, the participants became more comfortable with the medium and the technology and will participate more fully in the initiative.

Conclusion

The literature outlines the benefits of teachers doing research for themselves and the role of action research. The process of reflection is outlined and how reflection can benefit the teaching profession. The benefits and issues with collaboration are explored and the use of Computer Mediated Communications in facilitating collaborative reflection is discussed.

Chapter 3 – Design

Introduction

The literature review outlines the benefit of teacher collaborative reflection. However, the constraints of time and the facilitation of meaningful reflection at classroom level suggest that many teachers may rarely, if ever, use reflection as a means of evaluating their own classrooms (Hatton and Smith, 1995). Technology could provide the means to overcome both these restraints by creating an on-line research based environment (Maher and Jacob, 2006). The website '*Teach to ReflectReflect to Teach*' is designed to encourage users to collaboratively reflect and scaffold an action research process.

Objectives of the artefact as defined by the literature

Teachers doing research in their own school

As outlined in the literature review, teaching is seen about the immediate present and instant action, while reflecting is perceived as a more academic pursuit (Elbaz, 1988, McNamara, 1990 cited in Hatton and Smith, 1995). However, Quinn (2001) stresses that teachers are not taught how to examine their own teaching in light of their classroom practice and are therefore reluctant to research their own teaching. The purpose built artefact provides the teachers in this study with information on how to reflect on their own practice and a forum to collaboratively research their own situation.

Reflection as a process

Through the process of reflection as outlined by Dewey (1933) teachers can continually analyse their reflections and detect patterns which can lead to knowledge, which in turn leads to decisions about their practice. knowing what cues to evaluate and reflect on are the critical skills in reflection (McAlpine and Weston C, 2000).

Providing structural supports within the CMC application has been found to increase the participant's ability to engage in higher order cognitive activities and increase the extent and level of meaningful CMC discourse (Fretz et al., 2002, Angeli et al., 2003, Gilbert and Dabbagh, 2005, Maher and Jacob, 2006).

Therefore structure must be integrated into the design of the artefact. Gibb's (1988) reflective cycle is embedded in the '*enter your reflections*' area of the artefact, thus scaffolding the participant's reflections. They are also given space to reflect at length to allow for repeated analysis of the observations and interactions. The artefact facilitates the reflective process by encouraging the participants to reflect, review their reflections and reflect again. The artefact incorporates Heron's (1985) suggestions on the cyclical nature of co-operative enquiry and scaffolds the participant's thoughts to enable them to reflect in a more meaningful way as they go through the process. Navigation is clear and unambiguous. Users are automatically guided to further reflection and collaborative reflection.

Design decisions also had to incorporate two key issues. Elliott (1991) suggests that reflection could be encouraged by making the activity more manageable and Hopkins (1993) believed that by making the reflective process more meaningful and practice based, teachers were more willing to reflect. The users of '*Reflect to TeachTeach to Reflect*' are reflecting on their own personal teaching situations, as all the users are in the one school and share similar experiences, the reflective process is meaningful and practice based. It is designed specifically for the teachers using it, by providing tips and using scaffolded prompts that relate directly to their workplace issues. Again the navigation is designed to aid their reflective process by displaying all the links on the left panel of the website, thus prompting the user to view those pages and reflect.

Secondly, due to time constraints on teachers, there is little time for sustained collaborative reflection. Irish teachers, in particular, are not timetabled to complete administrative work.

This was addressed by making the artefact a website. If teachers are expected to reflect on their work, they need to be able to access the artefact outside of school hours, a website would be the most appropriate way of facilitating this need. The storage capacity of the technology eliminates the tedium of note taking and allows the users to retrieve segments of a previous discussion and reflect on them (Hawkes and Romiszowski, 2001). Also the use of technology, such as computer mediated communications and on-line peer journaling has been found to facilitate teacher reflection by providing them with an alternative forum to communicate in (Roskos et al., 2001, Hawkes and Dennis, 2000).

Collaboration

Another important element of the study is collaboration. This is a process where teachers share ideas and this creates a learning culture (Dixon, 2000, Boreham, 2000 and Head, 2003). It addresses the real issues that they face daily (Callan, 2006). Using CMC in the area of classroom practice, found that teachers did provide support to one another and shared information (Riding, 2001, Selwyn, 2000) and while the computer-mediated teacher dialogue was less interactive, it was significantly more reflective (Hawkes and Romiszowski, 2001).

The artefact incorporates the need for collaboration in a number of practical ways.

- The importance of collaboration is stressed weekly on the site/news page.
- As each participant views each other's reflections, they can immediately respond to those reflections through a prominent link on the same page.

Action Research

Action research gives ownership to the teachers and develops their skills of effective change management (Bassegy, 1995, Hatton and Smith, 1995, Carr and Kemmis, 1991). Clarke (2000) stressed that teacher reflection and research should have practical consequences, that is, consequences for practice.

The artifact has action research process embedded within it. The research decisions and parameters are determined by the teachers themselves, thus making the research relevant to their situation (see figure 1).

Description of the artefact in relation to the reflective/action research process

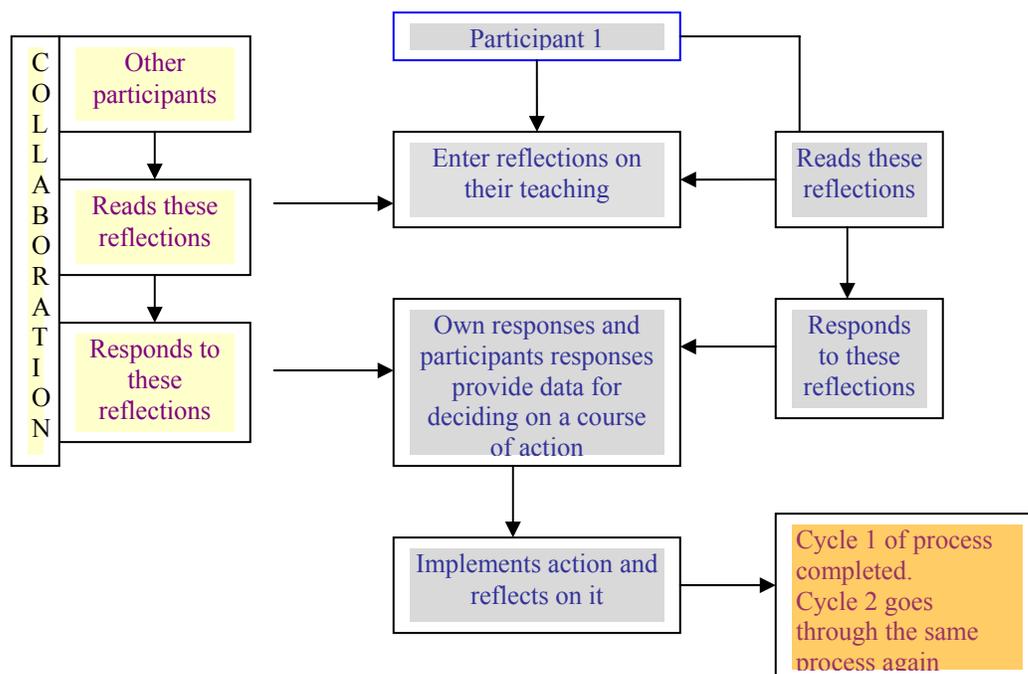


Figure 1

The Artefact

Opening Page

This page contained a password allowing the participants access to the rest of the website. Due to the intimate and confidential nature of the reflections inputted by the teachers, a decision was taken to password protect the website.

This decision was taken for two reasons:

1. To encourage the participants to reflect in a meaningful way knowing that their reflections could not be accessed by anyone outside the study.
2. If any of the participants used the website on a school computer, that a student or fellow teacher could not click on the url and access the website.

Site Page

As shown in Figure 2 this page contained links to all the individual home pages of the participants. It was also used as a 'news page'. It was updated weekly as the study progressed, providing participants with information on how the study was progressing and the stage the study was at. Another objective was to emphasise the collaborative nature of the study and to bring the study into their everyday teaching.



Figure 2

Each participant then clicked on the links panel to access their own page (Figure 3). This page contained all the links to the particular participant's reflections. From this page they could enter their reflections, view the reflections they had already entered, view other participants entries on their reflections and enter their private reflections.



Figure 3

All the links on the left bring the participant to the data entry pages. Once submitted they are brought back to the page they started with.

When they click on the *read the reflections* page, they can:

- Read their own reflections
- Click on the link back to enter more reflections
- Click on the link to reflect on the reflections they have already entered.

Also, the other participants, having read each other's reflections can then click on a link to respond to the reflections they have just read, thus creating collaboration.

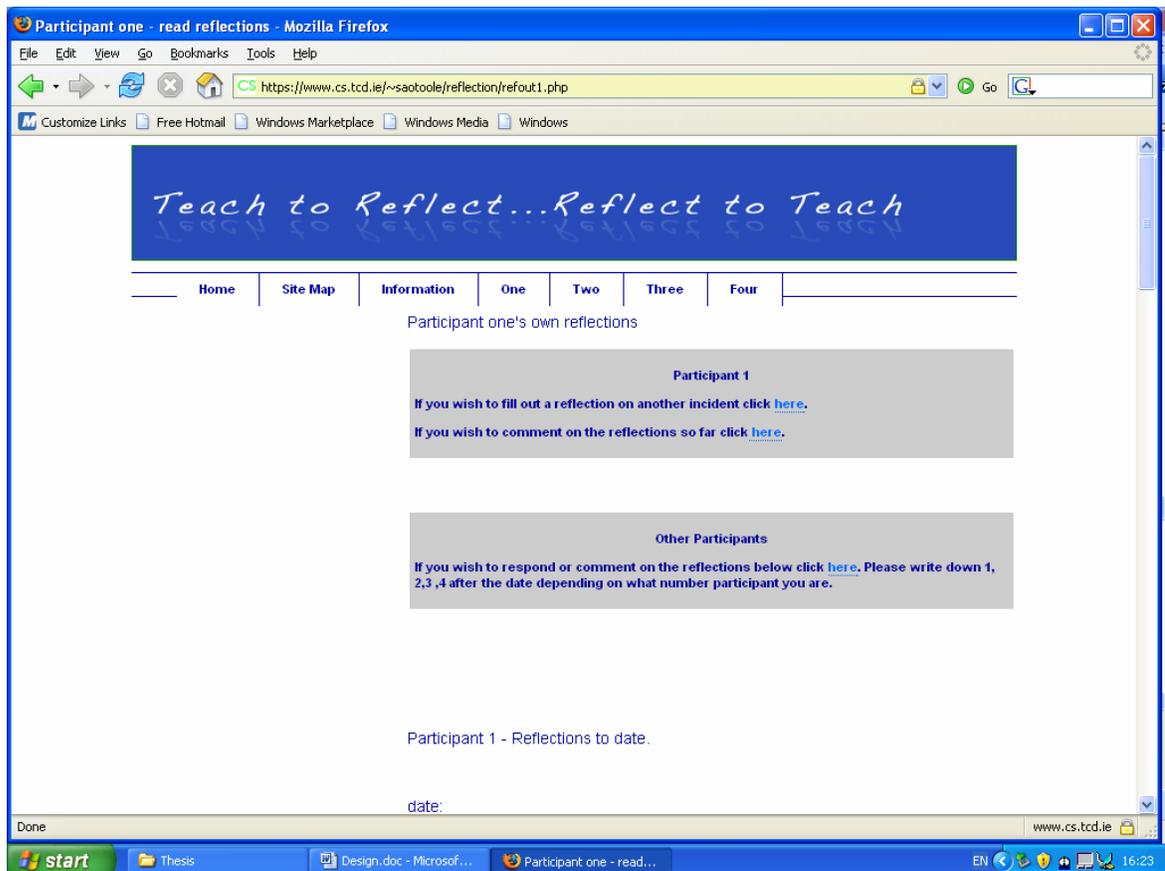


Figure 4

The information and tips pages are designed to aid the participants on how to reflect, advice, behaviours logs and tips are included. It also explains the action research process.

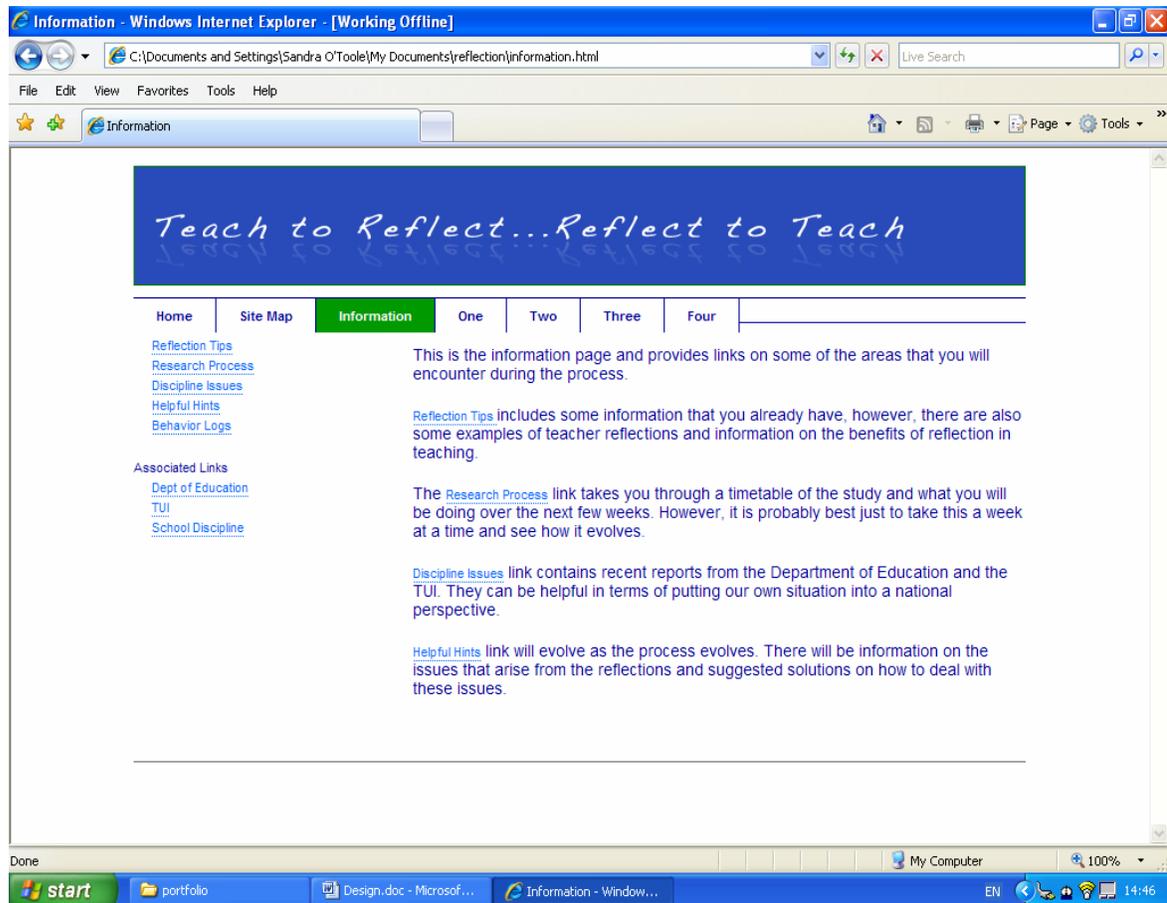


Figure 5

Functionality

The layout of the website was central to the design because the methodology of the research is embedded in the artefact. This made the website quite complicated and if the design of the artefact did not simplify this process, it would certainly confuse the users

The menu bar across the top is designed to aid navigation. It is situated on every page, allowing the user to return to any part of the website at any time. Once they enter specific pages, the prominent links guide them through the reflective and action research process.

When they enter their reflections, there is a submit button or a reset button to allow them to start again. They were advised to use the reset button with caution, as their initial reflections were probably an indication of their true feelings and therefore were authentic. However, due to the intimate nature of reflecting, a change of mind facility had to be offered.

Technology used

The website was built and designed using Dreamweaver to provide the information and the vehicle for the data collection. Php was then used to collect, collate and display the inputted data. The address of the website is: <http://www.cs.tcd.ie/~saotoole/reflection> (the password facility has been removed for examination purposes).

Conclusions

All the decisions taken in the design of the artefact was to provide a forum for teachers to reflect, collaborate and participate in an action research process that facilitated a change in practice. It also had the added function of collecting and preserving a rich collection of data to be analysed later. Care was taken to ensure that the artefact was designed in correlation with the literature.

Chapter 4 – Methodology

Introduction

This chapter explores the strategies employed to answer the research question. The data collection methods are outlined and justified, the implementation of this process is also described. The research process itself is outlined as is the rationale for the selection of the participants. Finally, the process of validation in the evaluation of the data collected is discussed and the emphasis on the ethical considerations within the research process.

Description and analysis of strategies employed

The overall strategy employed by this study is a case study which according to Cresswell (1998) is an exploration of a case, bounded by time and place, through detailed, in-depth data collection involving multiple sources of information. Case study research is particularly suitable for this study in that, it is set in a particular setting, that is, the author's school and involves studying a group of teachers reflecting collaboratively on their own practice. Multiple sources of data is analysed, themes developed and assertions made.

Action Research

An action research model was used to design and implement the research process. The aim of this particular method is to produce knowledge, which in turn informs a change in practice. It is generated within a workplace setting and is flexible in its approach (McNiff, 2002).

The type of action research carried out within this study is descriptive research in that it is a study whose purpose is to illuminate what is occurring in the participant's particular setting (Sagor, 2005). He also suggests that in an action research process the goals of the research study should be clearly stated. In this study the goals were to:

- Use on-line structured individual reflective journals to highlight teaching issues/problems for each participant
- Use on-line facility to encourage collaborative reflections on the issues highlighted.
- Ask participants to decide individually on a course of action to address those issues and reflect on the course of action.
- Repeat the cycle again.

The figures 6 and 7 highlight the stages of the action research cycle and the data collection instruments employed throughout they cycle.

Four instruments were employed for the data collection: reflections entered on-line through the artefact, questionnaires, semi-structured interviews and group discussions. The rationale for using more than one instrument was to ensure that the data could be triangulated.

The data collected will determine:

- 1 Level and depth of reflection done by participants ([artefact](#)).
- 2 Level and depth of collaboration between participants ([artefact](#), [questionnaires](#), [focus group interview and semi-structured interviews](#)).
3. Did the reflection highlight specific issues for the participants? ([artefact](#), [semi-structured interviews](#)).
4. Did the reflections feed into the action decision? ([artefact](#), [semi-structured interviews](#)).
5. What course of action did they individually decide upon? ([artefact](#)).
6. Did that action contribute to a change in practice? ([artefact](#), [semi-structured interviews](#)).
7. How did the artefact contribute to the reflective/collaborative process? ([questionnaires](#), [focus group meeting](#), [semi-structured interviews](#)).

8. Is this a viable means of facilitating teacher reflection for future use? (semi-structured interviews, focus group meeting).

On-line data collection

The artefact was designed to collect the individual reflections of the participants, the collaborative reflections, action decisions and reflections on the actions taken. This strategy provides the data necessary to evaluate the frequency and quality of reflection, the level of collaboration, the action decisions taken and the reflections on whether change in practice occurred or not.

Questionnaire

A questionnaire (Appendix E) was used to explore the collaboration issues that were emerging during the study. The instrument was a written questionnaire, designed with both multiple choice and open ended questions. While Cohen et al.(2000) advise that it is important that there is a balance of questions which ask for fact or opinion, the object of the questionnaire was to explore the reasons for the lack of on-line collaboration between the participants and so the balance between these types of questions are weighted in favour of the opinion type.

The questionnaire was piloted by another member of staff, any suggestions were incorporated into the final design. Participants completed the questionnaire anonymously.

Focus group meeting

A focus group interview was also arranged to examine the collaboration issues. This strategy was chosen to encourage the interaction among the interviewees and ensure participation by all the individuals in the group.

Semi-structured one-on-one interviews

These interviews explored issues relating to all aspects of the study. The semi-structured method allows the researcher to explore comments that go beyond the initial questions (Cresswell, 2003). It also provided the participant with an opportunity to discuss their participation in the study and the researcher to explore in more depth the issues that came out of the on-line data collection stage of the study (Appendix E for outline interview questions). Interview protocol was followed (Cohen et al. 2000) and the interviewee was briefed as to the purpose of the interview and every attempt was made to put the interviewee at ease. The interviews were recorded with the participants' permission to allow the researcher to participate and listen in a meaningful way to the responses and not worry about note taking. The interviews were then transcribed to facilitate analysis. (Appendix G).

The following diagrams illustrate the action research process and the data collection methods.

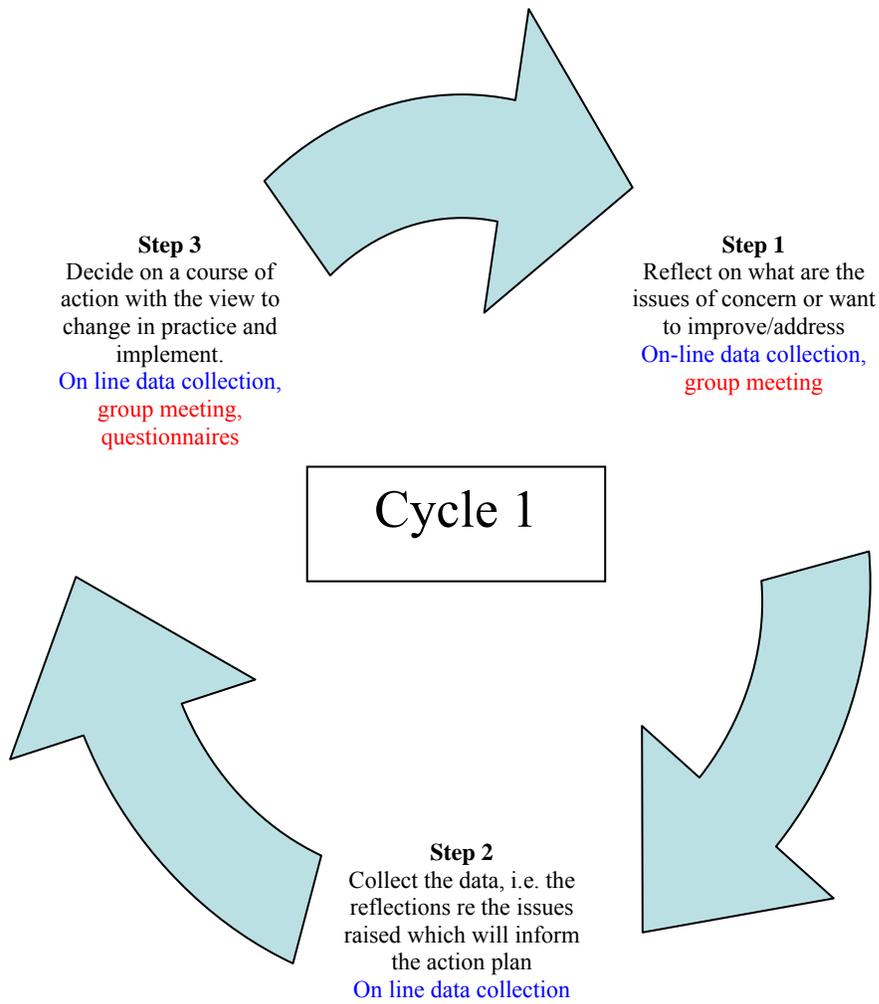


Figure 6

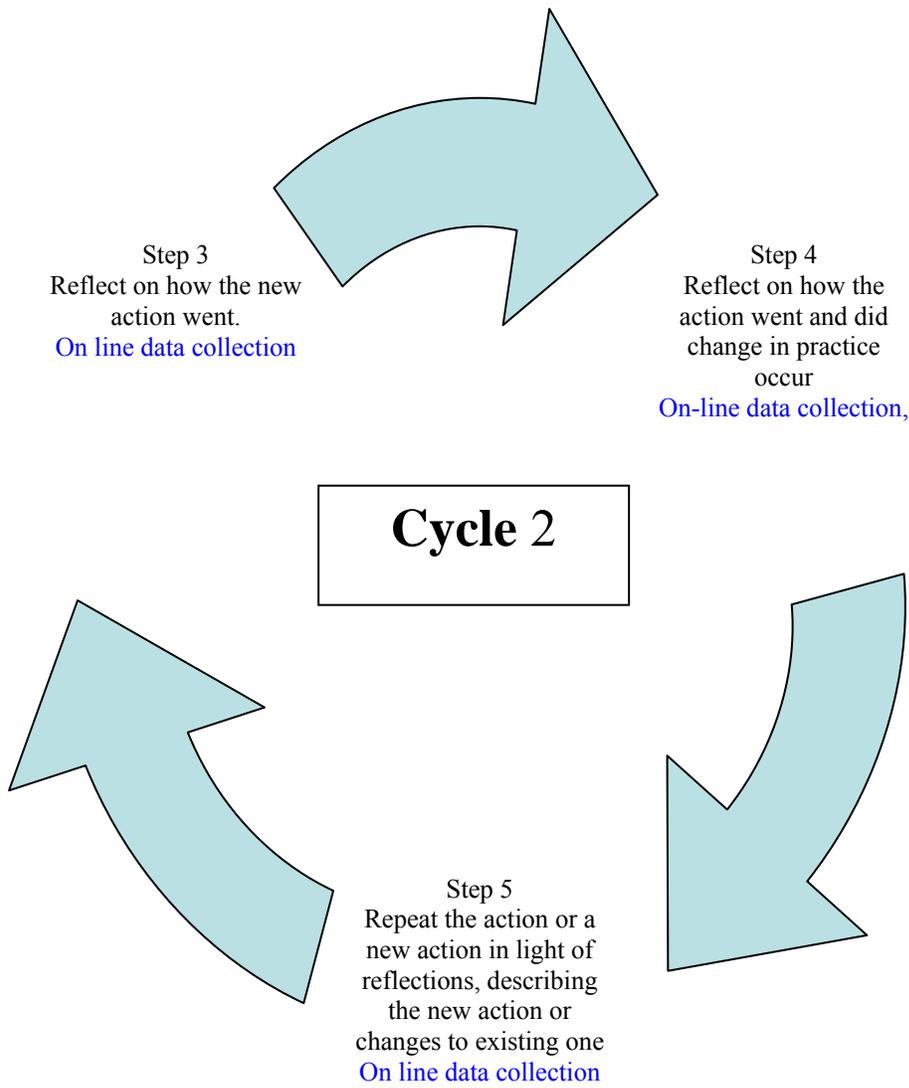


Figure 7

Implementation

The following is an outline of the implementation process (full description - Appendix A)

Step 1 – Invite participants to take part in the research process (December 2006)

Step 2 – Pilot the artefact (January 10th, 2007)

Step 3 – Preliminary meeting of supervisor and participants to outline the process and address any concerns. (January 17th, 2007)

Step 4 – Group meeting on reflective techniques (January 25th, 2007)

Step 5 – Begin reflecting on-line (29th, January, 2007)

School Mid-Term (February, 19th)

Step 7 - Decide on a course of action with the view to change in practice and implementation of that course of action (March, 22nd, 2007)

Step 8 – Implementing the action and reflecting on the effects of this change in practice.

School Easter Holidays (April 2nd – April, 16th)

The research cycle is now entering into the second phase or second cycle.

Step 9 - Second round reflections – reflecting on how the action went

Step 10 - Second round actions– ideas for a second course of action. Teachers views on how the first stage went

Step 11 – Semi-structured one-on-one interviews (April 17th – April 19th).

Time issues

There were time constraints on the study. The school holidays, in particular, came in the middle of the process and certainly had an effect on the impetus of the process. As a result of these constraints, the participants completed one and a half cycles of the action research process, further time would be required to complete further cycles of the process in any meaningful way.

Evaluation

The collection of data is generated by the action research process. This data was analysed with a view to searching for understanding rather than knowledge, for interpretations rather than measurements, for values rather than facts (Briggs (2002, p. 266).

All the reflections entered on-line were analysed for level and depth using ‘Criteria for the Recognition of Evidence for Different Types of Reflective Writing’ (Smith, 1992). (Appendix C).

All the data was analysed using Creswell (2003) guide on coding and theming. (Appendix D and G). Through the initial analysis of the data, forty nine codes emerged. Through the process of eliminating codes that could not be conveniently categorised, or were redundant, sixteen themes were identified. These themes provided the areas for discussion.

Validation

To ensure validation Cohen et al., (2000) suggest triangulation. On-line artefact, focus group interviews, semi-structured interviews and questionnaires have been used in this study, thereby ensuring triangulation and providing a richer data set.

Ethical Issues

Privacy was guaranteed through the use of passwords to access the artefact. Also, the participants were fully aware of the nature and aims of the research. They also were aware and signed consent forms (Appendix H) that this data would be available on-line. Emphasis was placed on the fact that this study was about the levels of reflection, collaboration, change in practice and how the artefact aided that process, not about teacher performance.

Bias

Due to the researcher's position as a colleague of the participants, every effort was made to eliminate as much bias as possible. Participants entered their reflections as participant 1, 2, 3 and 4, and were therefore anonymous. How much information they chose to reveal about themselves was at their discretion.

Conclusion

One of the major features of well-collected qualitative data is that it focuses on naturally occurring, ordinary events in natural settings (Denscombe, 2005). This study used an action research in a school setting and examined a group teachers using an online artefact to facilitate collaborative reflection. Four methods of data were used to collect findings, ensuring triangulation and a rigorous process of coding and theming ensured that bias was kept to a minimum in analysing the data.

Chapter 5 – Findings and Discussion

Introduction

Asynchronous CMC facilitating collaborative teacher reflection and change in practice is the central issue in this study. The data suggested that a computer mediated communication application can facilitate teacher reflection, it does have an influence on teacher collaboration but cannot facilitate it without face-to-face interaction and change in practice did occur. However, there is an underlying question: How is it, that the participants, who reflected on-line in a meaningful way on their teaching, enjoyed the reflective process and changed their practice as a result of their reflections, did not fully engage in the process? The data revealed a very real dichotomy between the benefits of on-line teacher reflection versus the realistic place it has in a teacher's professional life.

Design of the artefact

As discussed in the Design Chapter, the matter of navigation was crucial in ensuring that the participants felt confident using the website. Their responses were all very positive and they did not encounter any problems with using the website. *'I was surprised at how easy it was for me to use and then the prompts came up, it was fantastic', 'website was grand, easy to use, very straightforward', 'very professional', 'it is excellent because it gives you an opportunity to organise your thoughts'.*

On the issue of using pen and paper instead of reflecting on-line, three participants found that the website organised their reflections and it eliminated the *'need to mind a notebook'*. No participant found the issue of typing up their reflections tedious or off-putting. However, two participants mentioned the absence of a spell check facility.

Reflection

In this study the participants were asked to reflect on any area of their teaching life. The following table outlines the issues:

Issues	Number of reflections on-line
Discipline	5
Teacher's subject areas	5
Students level of work	3
Subject levels	2
General issues	1
Issue with colleagues	1

This illustrates that the reflections were not focused on any one area. Further analysis found that three participants reflected on completely different topics each time they logged on. This will be explored in a further section of the chapter.

Levels of reflection

The reflections were analysed using Smith (1995) Criteria for the Recognition of Evidence for Different Types of Reflective Writing, (full analysis in Appendix C).

Descriptive Writing	1 - purely descriptive 2 - started as descriptive, but moved onto the further levels during the entry.
Descriptive Reflection	4
Dialogic Reflection:	12
Critical reflection	5

These findings indicate that the participants did reach high levels of reflection quite quickly and suggests that actual reflective thinking came quite easily to them. All the participants had looked through the information link on the website and found this helpful . They all said that once they logged on, they found the actual writing of the reflections '*easy*' , '*I found I enjoyed sitting down and thinking about what happened during the day*', '*it definitely clarified things for me ...*', '*it's amazing how much your mind spins off in different directions in terms of the little things you would not have thought about*'. However, the high level of reflection and apparent ease of reflecting, did not translate into a high quantity of reflections entered on-line. To examine this dichotomy, the process of reflection, barriers to reflection and the use of the artefact in the study will be discussed.

Process of Reflection

Dewey (1910) introduced the concept of reflection as a process, Schon (1983) introduced the concept of 'reflection in action', reflecting on a situation while it is occurring. All participants described situations, examined and discussed problems, and suggested possible solutions. Reflective thinking usually addresses practical problems, allowing for doubt, in the process finding possible solutions (Hatton and Smith, 1995). This was borne out by the reflections entered on-line. In analysing both the reflections and the interviews, the process of reflection seemed to occur in two stages.

The first stage involved thinking about the issues, The participants remarked that during the study they were analysing and thinking about situations as they were occurring, '*the reflections automatically pop into my head because we are involved in the middle of it (the process) at the moment*', '*even while the incident is happening, I am thinking, oh there is a good reflection in that*' or '*it does get you thinking subconsciously and even when you are not at the computer sometimes it does flash into your head and it makes it more relevant in your mind*'. This suggests that the reflective process was already happening, even before the participant sat down in front of the computer.

When asked if this would have happened naturally, without their participation in the study, all the participants answered 'no', *'no, I would have not thought about it (the issue) and would have just tried to get over it as quickly as possible'*. However, on further questioning, about the low quantity of reflections, participants did admit, that while they were thinking about the issues, and thought there might be a good reflection there, they did not always make it to the website to enter the reflections. This issue will be explored further.

The artefact and the reflective process

The second stage involved the artefact and how it facilitated the reflective process, three of the participants said that they looked at the other participants reflections before writing their own, this was particularly helpful in the initial stages of the study *'reading other teachers comments was really helpful'*, *'I was kind of watching the site to see had other people put in their reflections'*, *'I would have looked at other people's entries first'*.

They all said that they looked at their own previous reflections as well, even though three participants did not continue reflecting on those issues, they still found rereading the entries useful, *'when I sat down I did read my last reflection and that did spark off thoughts'*. This is interesting, in relation to the use of the artefact. McAlpine and Weston C, (2000) stressed that reflection facilitates the analysis of multiple, repeated observations by analysing these reflections, patterns can be detected that will then lead to knowledge and change in practice.

The website facilitated this by providing the users with a page in which to '**reflect on their reflections**'. None of the participants used this page, therefore concluding that they did not analyse their own reflections constructively thus finding it difficult to detect patterns. This is partially true. Only one participant developed the same issues throughout her reflections, the others used their previous reflections as a 'warming up' exercise. They were using the facility as more of a diary, recounting problems as they were occurring, and developing those issues in the initial reflection, rather than as a reflective process on past reflections. None of the entries started with 'as I was talking about in my last reflection' and many of them started with *'today I*'.*'*

This diary element was very well illustrated when one participant said *'I found I enjoyed sitting down and thinking about what happened during the day....as soon as I sat down at the computer I knew what I was going to talk about'*.

As outlined in the implementation process (Appendix A), the participants were familiar with the website and knew about the '**reflect on their reflections**' link. This suggests that they consciously chose not to use this facility as part of the reflective process, that even though they reread their previous reflections, they did not wish to reflect on them, but write about an immediate issue.

Prompt system within the artefact

The artefact also incorporated a prompt system to facilitate the reflective process.

McAlpine and Weston (2000) wrote that the critical skill in reflection is to know what cues to evaluate and reflect on. The advantage of a CMC application is that it can provide those structural supports and Fretz et al. (2002) found that those supports increased the participant's ability to engage in higher order cognitive activities. Gibbs (1988) reflective cycle was incorporated into the '**enter reflections**' page. An analysis of the reflections on-line supported the literature and illustrated that the prompts did elicit further reflections.

They brought the reflections from the descriptive level to the dialogic reflection stage and in one case onto critical reflective level. Only one participant did not use the prompts to develop one of their reflections further. This area was also discussed in the interviews and participants responded that they found the prompts very helpful, saying that *'they added a bit of structure to the whole reflection, so there was a start, middle and end and if you felt you ran dry, you saw this and this, it made the reflecting easier'*, *'great particularly at the start'*, *'the prompts were a huge help because maybe if I had of sat down and there was just 'enter your reflections', then maybe I would have been struggling, you know they give you a frame and they were so much easier to work on'*, *'the prompts helped me to develop my ideas and then I just went on from there and was surprised at how much I wrote'*.

The quality of the reflections entered on line and the response of the participants to questions on the prompts suggests that the prompts were an important and vital part of the artefact in eliciting more meaningful reflections.

Continuity of reflective process

The third area in relation to the process of reflection refers to continuity, reflection leads to new understandings and further reflection leads to new understandings and so on, it must be continuous (Rodgers, 2001).

Over the 12 week period there were 25 reflective entries, 5 reflections per person being the average. In accordance with the literature, the participants were very aware that they did not get into a routine and, all believed that this contributed to their limited engagement in the process. They acknowledged that the amount of reflections they entered was low, and that the expected two or three reflections a week did not materialise. *'A more rigid time frame...you would input information more regularly...I feel people have more motivation to participate in the study', 'if you have been putting in two or three a week, you would have gotten into the habit of doing it', 'initially it is hard, but when you start doing it, it gets easier, set aside time and get into a routine'* (this participant put in four reflections, but still recognised that routine seemed to be the key). When asked what they would do differently, they stressed that structure within the process was the key. They all said that if they had been asked to put in maybe two/three reflections a week by a certain day, they would have been more *'disciplined'*. However, on analysis of the weekly bulletin board in the web-site, it states quite clearly each week what they were expected to do. Therefore the website did provide the structure.

This finding needs to be analysed under two areas. Firstly, did they actually read the instructions on the website? Secondly, was this used as the only viable reason the participants could think of retrospectively to justify their lack of reflections.

Using the website

The quantity of reflections entered and their comments in the other data collection methods, indicated that the participants never made maximum use of all artefact's features. They used it to look at each others reflections, read their own, enter their reflection and enter the actions. But the '**site page**' or bulletin board became 'redundant' once they got familiar with the site. Three participants said that they went automatically to the reflections area of the website once they were familiar with it.

This would suggest, firstly, that they misunderstood the importance of this page. They were told verbally during the study to look at the site page, however, the researcher, as a colleague, was hesitant in the amount of demands she could make on the participants' time, therefore, the misunderstanding about the importance of the site page might be due to the restricted amount of preparation for the study.

Secondly, it could be that the site page was not made relevant enough for the participants. Instructions for the week were there, but the dates of the reflections indicate that no participant reflected on a weekly basis. When they did reflect, their comments in the interviews suggested there was a 'panic' element involved. *'Oh I better go and do this, I have not done it for a while'* and the dates of their reflections collaborated this. The site page could only have worked, if a momentum had built up and it became a weekly activity. This would also indicate that an initial 'trouble shooting' phase was needed in the study, to iron out this problem.

However, the participants were volunteers and this was not a 'whole school exercise', so the participants were not being 'reprimanded' for not doing it by management. In accordance with Hatton and Smith (1995), reflection is not seen as a part of teachers lives. Teachers days are very structured and routine, classes are timetabled, set at the beginning of the year. The data suggests that these teachers needed the activity to be structured into their working week. Routine use of the artefact was needed from the start, the researcher could only suggest this, the participants had to implement it.

Time issues

When questioned about their limited engagement in the process, the issue of time was forwarded as a defence. This seems quite straight forward, however, further analysis showed that it was not merely about finding time, but about prioritising time. On one level, the participants said that the reflections took up to forty five minutes. They did not have a problem with that *'once I was there doing it I was happy enough and time just slipped by. I was surprised I was often there for 45 minutes'*, *'you get so caught up in what your are reflecting on that you don't think of anything else..'*

But, the fact that it did take forty five minutes meant that they had to make a conscious decision to find the time, *'I know when I sat down to do it I enjoyed it...but... .it was just trying to get to that point of sitting down. (was the problem)'*, *'once I actually sat down and started it was fine'*, *'once you were sitting down and had the screen in front of you it did get you thinking, but 10 minutes prior to that you were thinking, oh I better go and do this'*. The reflections were detailed and long, so they were not just saying they enjoyed it to please the researcher.

Teaching and reflecting

Elbaz, (1988) and McNamara, (1990) cited in Hatton and Smith, (1995) suggest that teaching is seen about the immediate present, while reflecting is perceived as a more academic pursuit. This was apparent when the author asked teachers in her school to volunteer for the project, the response was muted and a little negative.

The participants, without being aware of the literature stated: *'.....doing stuff outside the classroom that has no direct benefit what happens in the class immediately does not seem to play a significant role in the priorities for teachers'*, and *'it's kind of like time, but it is a kind of work thing as well You are just so focused on class and what I have to do for the next class or have I everything ready for the class that is coming next.....'*

..I'd rather focus on what's ahead if I have a class off', ' you get a break in school the last thing you want to do is to sit down and think about everything' , 'it kind of gets shelved or lies half way on the priority list, but it definitely does not feature at the top'. Exploring this issue further, when asked in the interviews 'but if you enjoyed it so much, why did you not do it more?', one participant put it quite succinctly ' it's funny I suppose, it does not make any sense, that if we enjoyed it so much we should have been sitting down and doing it a bit more, I don't know.... Maybe it's just too much like work. I mean you can say, that I enjoy my work but you don't want to make more work for yourself'.

McNamara (1990), and Cochran Smith (1995) also highlighted the time and opportunity factor, that the daily rhythms of schools typically provide little time for teachers to talk and reflect and that these are imperatives in order to foster effective reflection. Providing the teachers with an opportunity to reflect and collaborate on line, in their own time, was one of the reasons for the on-line artefact. Due to circumstances beyond the control of the study, an opportunity presented itself to test this issue out. Two of the participants moved house during the study and had no broadband or internet connection at home, they said that they entered their reflections during the school day. Classes in the school last for 40 minutes, so, time was a factor and not just an excuse. Both said they would have entered more reflections if they had the internet at home.

However, despite their perceived difficulties they still managed to enter thirteen reflections, whereas the two participants who reflected at home entered twelve. On further exploration, the two participants using the artefact in school did complain about finding time in a busy day, and the immediacy of preparing school work over reflecting, whereas the two participants using the artefact at home, did not seem to have those issues, it was more a case of prioritising other activities over entering reflections.

Collaboration

Eisner (1998) suggests that the physical and organisational structure of schools isolates teachers from one another. When questioned, all the participants said that they did not collaborate in any structured manner in the staffroom. As outlined in the Design chapter, collaboration was an integral element of the on-line artefact. From week two of the study participants were encouraged to read each others comments and reflect on them. The benefits of collaboration were discussed and the collaboration element of the website demonstrated at the preliminary meetings.

Brownell et al.(2006) suggests that not much is known about how individual teachers respond to collaboration. Preliminary data from the on-line artefact demonstrated that no participant was using the collaboration section of the artefact and that no comments, let alone an exchange of ideas were being posted. Head (2003) stressed that collaboration is complex and can be difficult and Callan (2006), points out collaborative engagements have not been part of the traditions of second-level schools in Ireland. With this in mind a questionnaire (Appendix F) was given to the participants and a focus group interview was held.

The data revealed very definite views on collaboration from the participants. It was only when the study started that they realised how averse they were about commenting on each others reflections on-line. On the questionnaire three participants stated that they had looked at each others comments before they had done their own reflections. Curiosity and also to compare their reflections with other teachers reflections were stated as the reasons.

When asked why they had not commented on each others reflections they all chose the '*felt uncomfortable about commenting on colleagues reflections*' box and two chose the '*did not know what to say*' box, as well.

When asked to elaborate, two issues emerged. Firstly, was the participants own confidence in their reflective writing - *'I wanted to see what others were writing in order to see if I was writing the right kind of stuff'*, and in their teaching experiences- *'curious to see if people were having the same problems and if how they were handling them'*. This correlated directly with the literature in the area of teacher isolation and vulnerability, (Lortie, 1975, Goodlad, 1984, Liberman and Miller, 1984 and Brookfield, 2002). As one participant said *'the teacher is very much situated in the classroom and they decide what gets done and when'*, or another participant wrote on their questionnaire *' teachers are very alone in their work. They are the boss behind the classroom door'* therefore, any public sharing of ideas or in this case, very private reflections could be intimidating. All the participants were very aware that other teachers would be viewing each other's reflections and therefore subconsciously thought about this before entering their reflections, *'I did not want to start because I felt what I wrote might be stupid'*, *'I did not know what other people would write'*, *'You did not know what you should be saying and I was kind of watching the site to see had other people put in their reflectionsI was like the a six year old seeing what the guy beside me had done first before I put anything on paper'*, *'I just wanted to be sure that what I was going to enter was kinda keeping with the other comments'*. The data suggests that each participant did not mind the other participants reading their reflections, and while anonymity was an option, all chose to reveal themselves through their reflections and no one used the **'private reflections'** link on the website. They did, however, have concerns about what the other participants would think of their entries.

While the participants did not engage in on-line collaboration in a written sense, they artefact was certainly influencing collaboration by allowing the participants to view each others reflections. *'I think that seeing how other teachers get on reassures me that it's not just me with difficulties. I feel lost and alone and this study has helped me to recover from this'*, *'curious to see if people were having the same problems, and if how they were handling them'*, *'I generally find it helpful to air my problems with students and to hear others have similar problems and what they have done'*, *'the technology was really helpful because I could read other peoples entriesI would see other people had the same issues and that was helpful'*.

Therefore the artefact facilitated the first phase of collaboration, sharing each other's reflections, however, the second phase, replying to each other, did not happen. When asked in the focus group interview if they were discussing the issues raised on-line in the staffroom, all replied 'no'. Further questioning revealed the confidence issue again '*A little bit of who was I to make suggestions, as I have or will have the same problems*', '*if I was really confident about a possible solution I would have made it*'. This correlates with Rosenholz (1991) who suggests that offering assistance to colleagues implies that the donor's advice is more competent than the recipient

The participants also indicated that their on-line comments could be misinterpreted. Once written, the statement could not be qualified, '*It was difficult to write comments about somebody else on the computer as you're not sure how they will take it or perhaps they might take you up wrong*', '*it would be easier to comment on people's reflections face to face, writing down your suggestion makes it formal*'. All the participants expressed a preference for face to face collaboration '*yeah it's thorough discussion that collaboration takes place, like sitting and talking*', '*I do not believe that on-line collaboration can be a substitute for face to face collaboration that allows people to bounce ideas off each other in a more immediate way*'. They suggested that the on-line reflections could support discussion at face-to-face meetings.

Hawkes and Dennis (2003) noted that due to time constraints on teachers, CMC gives them an alternative forum to communicate in. However, the participants felt that the time saved by on-line collaboration was not a substitute for face to face collaboration.

Due to the time limitation of the study, the participants were expected to become 'comfortable' with the CMC medium quite quickly. One participant concurred with Hawkes and Romiszowski, (2001) findings on this issue, '*I think in order to collaborate on line people need to be more comfortable with the idea of discussing ideas and problems through the medium of the internet*'.

Three participants commented that over time they did become more comfortable with the forum and given more time they would have developed their reflections more. However, the study cannot be sure if more time would have helped the participant overcome their aversion to collaborating on-line.

Action Research

Schmuck R, (1997) believed that action research offers a means of changing from current practice towards better practice. The action research element of the study was very successful. All the participants used the action section in the website to discuss an action in relation to their own situation and reflected on how those actions went. Three participants used their reflections as a basis for their actions. The other participant said that the reflective process had stimulated his action decision.

One full action research cycle and stage one of the second cycle was completed. Time constraints and the low level of reflections in the first cycle did have implications for the second cycle .

The data revealed that change in practice occurred and the participants found that the action element did have future implications for them in their teaching. *'The actions would be beneficial for me to examine these issues as a class teacher in the future', 'it was something that I would keep in mind for future groups in future years'*. They also distinguished between doing something different in class and doing this action and reflecting on it, *'I never looked back to see how did that go, did it have an effect.....(the study) made this more real, it made it stand out that bit more', 'the action was always something I always wanted to do, by doing this study it gave me the confidence'*.

The data suggests that the artifact supported this process by collating the reflections and providing the participants with a forum to discuss and reflect on their actions. All participants used this facility.

Chapter 6 – Conclusion

This study explored the viability of an on-line artefact as a vehicle for collaborative reflection and change in practice for teachers. Within this overall question, several issues were addressed, such as, the role of the artefact in the reflective process, did collaboration occur and if so, how did the artefact contribute to this, did change in practice occur and how did the artefact itself, or the design of the artefact scaffold this process and finally, the viability of this artefact and collaborative reflection in the daily lives of teachers.

A case study examined the experience of four teachers in a Vocational School who used the on-line artefact to scaffold an action research study incorporating collaborative reflection.

The teachers reported that the on-line artefact helped them reflect and they all enjoyed reflecting on-line. They believed that the reflective process was very beneficial and helped them in their teaching and without the on-line reflective process, this would not have happened. However, finding the impetus to get to the computer to reflect was clearly a problem for all of them. No matter how enjoyable the activity was, it was still viewed as work, and added another layer to an already busy schedule. They suggested that to make such an activity routine, it would need to be structured into their daily work timetable

On the issue of collaboration, the participants did use the artefact to view each others reflections, but were unwilling to write any comments on-line about those reflections. Therefore, the artefact did not facilitate on-line collaboration. However, all agreed that they would prefer to write their own reflections on-line, view each others reflections on-line and discuss all the reflections in a face-to-face forum. The prospect of collaboration, in this blended approach, was favourably received.

The action research element of the study was very successful. Although time constraints did have an impact, the data did reveal that an action research process occurred and the artefact facilitated this process.

Time constraints in terms of preparation and implementation may have prevented the participants from fully engaging in the artefact. Due to the small number of participants, it is not possible to generalise the findings in relation to the teaching profession as a whole. However, the findings concur with the literature and present interesting issues for further research.

In relation to future studies on the use of the artefact within the teaching profession or in preservice courses such as the Higher Diploma in Education, it is recommended that there would be a more extensive preparation period for the participants before they start reflecting on-line, that the teachers/students would have definite time put aside in their timetable for the activity and that a blended approach to collaboration is employed.

Maher and Jacobs in their 2006 study could identify no other studies that examined teachers using a CMC environment to conduct their own individual action research projects. It is hoped that this study has begun the exploration of the use of a CMC application and teacher collaborative reflection within an Irish context, and the issues identified in this study could merit further studies in this field.

References

- Adelman, C., & Carr, W. (1988). *Whatever Happened to Action Research?* Paper presented at the Annual Meeting of the British Educational Research Association, Norwich, University of East Anglia.
- Allison, C. (1995). *Present and Past: Essays for Teachers in the History of Education*. New York: Peter Lang.
- Angelli, C., Valanides, N., & Bonk, C. J. (2003). Communication in a Web-based Conferencing System: The Quality of Computer Mediated Interactions. *British Journal of Educational Technology*, 34(1), 31-34.
- Baird, J. R. (1992). Collaborative Reflection, Systematic Enquiry, Better Teaching. In T. Russell & H. Munby (Eds.), *Teachers and Teaching: From Classroom to Reflection* (pp. 33-49). London: The Falmer Press.
- Barnes, D. (1992). The Significance of Teachers' Frames for Teaching In T. Russell & H. Munby (Eds.), *Teachers and Teaching: From Classroom to Reflection* (pp. 9-32). London: The Falmer Press.
- Barth, R. S. (2001). *Learning by Heart*. San Francisco: Jossey-Bass.
- Bassey, M. (1995). *Creating Education Through Research*. London: Kirklington.
- Boreham, N. C. (2000). *Collective Competence in the Hospital Emergency Department*. Paper presented at the BERA, Cardiff.
- Borko, H., & Putnam, R. (1995). Expanding a Teacher's Knowledge Base: A Cognitive Psychological Perspective on Professional Development. In T. R. Guskey & M. Huberman (Eds.), *Professional Development in Education: New Paradigms and Practices* (pp. 35-65). New York: Teachers College Press.
- Boud, D., P. C., & Docherty. (2006). *Productive Reflection at Work*. Abingdon: Routledge.
- Brookfield, S. (2002). Using the Lenses of Critically Reflective Teaching in the Community College Classroom. *New Directions for Community Colleges*, 1(18).
- Brownell, M., Adams, A., Sindelar, P., Waldron, N. Vanhover, S. (2006). Learning from Collaboration: The Role of Teacher Qualities. *Exceptional Children*, 72(2), 169-185.
- Callan, J. (1998). *Principal Staff Relationships*. Paper presented at the European Secondary Heads Association Annual Conference, Ireland.
- Callan, J. (2006). *Developing Schools Enriching Learning: The SCD Experience*. Maynooth: Department of Education, National University of Ireland, Maynooth.
- Carr, W., & Kemmis, S. (1986). *Becoming Critical*. Basingstoke: The Falmer Press.
- Clarke, D. (2000). Reflection on Practice. *Journal of Mathematics Teacher Education*, 3, 201-203.
- Cochran-Smith, M., & Lytle, S. L. (1993). *Inside-Outside: Teacher Research and Knowledge*. New York: Teachers College Press.
- Cohen, L., Manion, L., & Morrison, K. (2000). *Research Methods in Education*. London.
- Cresswell, J. (1998). *Qualitative Inquiry and Research Design*. California: SAGE Publications Inc.
- Cresswell, J. (2003). *Research Design, Qualitative, Quantitative and Mixed Methods Approaches*. California: Sage.
- Dabbagh, N. (2003). Scaffolding: An Important Teacher Competency in On-line Learning.

- Techtrends*, 47(2), 39-44.
- Darling-Hammond, L. (1998). Policy and Change: Getting Beyond Bureaucracy. In A. Hargreaves & e. al (Eds.), *International Handbook of Educational Change*. Londong: Kluwer Academic Publishers.
- Denscombe, M. (2005). *The Good Research Guide for small scale social research projects*. Maidenhead: Open University Press.
- Dewey, J. (1910). *How We Think*. Lexington: D.C. Heath and Co.
- Dewey, J. (1929). *The Sources of a Science Education*. New York: Horace Liveright.
- Dinkelman, T. (1997). The Promise of Action Research for Critically Reflective Teacher Education. *The Teacher Educator*, 32, 250-274.
- Dinkelman, T. (2000). An Inquiry into the Development of Critical Reflection in Secondary Student Teachers. *Teaching and Teacher Education*, 16, 195-222.
- Dixon, N. (2000). *Common Knowledge*. Boston: Harvard Business School.
- Eisner, E. (2002). *The Educational Imagination: on the design and evaluation of school programs*. New Jersey: Prentice Hall.
- Elliott, J. (1991). *Action Research for Educational Change*. Buckingham: Open University Press.
- Evans, R. (1996). *The Human Side of School Change*. San Francisco: Jossey Bass.
- Fretz, E. B., Wu, H., Zhang, B., Davis, E., Krajcik, J. S., & Soloway, E. (2002). An Investigation of Software Scaffold Supporting Modelling Practices. *Research in Science Educatation*, 32(4), 567-589.
- Fullan, M. (1982). *The Meaning of Educational Change*. Toronto: OISE Press.
- Fullan, M., & Hargreaves, A. (1991). *What's Worth Fighting For In Your School*. Buckingham: Open University Press.
- Gibbs, G. (1988). *Learning by Doing: A Guide to Teaching and Learning Methods*. Oxford: Oxford Further Education Unit.
- Gilbert, P., & Dabbagh, N. (2005). How to Structure Online Discussions for Meaningful Discourse: A Case Study. *British Journal of Educational Technology*, 36(1), 5-18.
- Goodlad, J. (1984). *A Place Called School*. New York: McGraw Hill.
- Habermas, J. (1971). *Toward a Rational Society: student protest, science and politics*.
- Hatton, N., & Smith, D. (1995). Reflection in Teacher Education: Toward Definition and Implementation. *Teaching and Teacher Education* 11(1), 33-49.
- Hawkes, M., & Dennis, T. (2003). Supporting and Assessing Online Interactions in Higher Education. *Educational Technology*, 43(4), 52-66.
- Hawkes, M., & Romiszowski, A. (2001). Examining the Reflective Outcomes of Asynchronous Computer Mediated Communications on Inservice Teacher Development. *Journal of Technology and Teacher Education*, 9(2), 285-308.
- Head, G. (2003). Effective Collaboration: Deep Collaboration as an Essential Element of the Learning Process. *Journal of Educational Enquiry*, 4(2), 245-270.
- Heron, J. (1985). The Role of Reflection in a Co-operative Inquiry. In D. Boud, R. Keogh & D. Walker (Eds.), *Reflection; Turning Experience into Learning* (pp. 128-138). New York: Kogan Page.
- Hitchcock, G., & Hughes, D. (1989). *Research and the Teacher*. London: Routledge.
- Hopkins, D. (1985). *A Teachers Guide to Classroom Research*. Milton Keynes: Open University Press.

- Hough, B., Smithey, M., and Evertson, C. (2004). Using Computer Mediated Communication to Create Virtual Communities of Practice for Intern Teachers. *Journal of Technology and Teacher Education*, 12(3), 361-386
- Kincheloe, J. L. (2003). *Teachers as Researchers: Qualitative Inquiry as a Path to Empowerment*. London: Routledge Falmer.
- King, J. A., & Lonquist, M. P. (1994). *The Future of Collaborative Action Research: Promises, Problems and Prospects*. Minneapolis: University of Minnesota.
- Lortie, D. (1975). *School Teacher: A sociological study*. Chicago: University of Chicago Press.
- Maher, J., & Jacob, E. (2006). Peer Computer Conferencing to Support Teachers' Reflection During Action Research. *Journal of Technology and Teacher Education*, 14(1), 127-150.
- Martin, G. (2001). *School and Curriculum Development Initiative*. Maynooth: NUI Maynooth.
- Marz, R. W., Blumenfeld, P. C., Krajcik, J. S., & Soloway, E. (1998). New Technologies for Teacher Professional Development. *Teaching and Teacher Education*, 14(1), 33-52.
- McAlpine, L., & Weston, C. (2000). Reflection: Issues related to improving professors' teaching and students' learning. *Instructional Science* 28(1), 363-385.
- McNamara, D. (1990). Research on Teachers' Thinking: Its Contribution to Educating Student Teachers to Think Critically. *Journal of Education for Teaching*, 16(2), 147-160.
- McNiff, J. (2002). *Action Research, Principles and Practice*. London: Routledge Falmer.
- Meyer, R. W., & Bruce, B. C. (1993). *Building Teacher-Researcher Collaboration: Dilemma and Strategies* (No. 57). Illinois: University of Illinois.
- Miles, M., & Huberman, M. (1994). *Qualitative Data Analysis* (Vol. 2). London: SAGE Publications.
- Minsky, M. (1975). A Framework for Representing Knowledge. In P. Winston (Ed.), *The Psychology of Computer Vision*. New York: McGraw-Hill.
- Moon, J. (1999). *Reflection in Learning and Professional Development: Theory and Practice*. London: Kogan Page Ltd.
- Moon, J. (2004). *A Handbook of Reflective and Experiential Learning: Theory and Practice*. London: Routledge Falmer.
- Munn, P., Johnstone, M., & Chalmers, V. (1992). *Effective Discipline in Secondary Schools and Classrooms*. London: Chapman Publishing Ltd. .
- Noffke, S. (1997). Professional, Personal and Political Dimensions of Action Research. In M. Apple (Ed.), *Review of Research in Education* (pp. 305-343). Washington D.C: American Educational Research Association.
- Oja, S. N., & Smulyan, L. (1989). *Collaborative Action Research: A Developmental Approach*. London: Falmer Press.
- Osterman, K.F. and Kottkamp, R.B. (1993). *Reflective Practice for Educators: Improving Schooling Through Professional Development*. California: Corwin Press
- Potter, G. (1998). *Facilitating Critical Reflection on Practice Through Collaborative Research*. Paper presented at the National Conference of the Australian Association for Research in Education, Adelaide.
- Quinn, M. (2001). *Going Out, Not Knowing Whither: Education the Upward Journey and the Faith of Reason*. New York: Peter Lang.

- Redmond, B. (2004). *Reflection in Action: Developing Reflective Practice in Health and Social Services*. Aldershot: Ashgate Publishing Limited.
- Reid, B. (1994). The Mentor's Experience. In A. Palmer, Burns, S., Bulmer, C (Ed.), *Reflective Practice in Nursing*. Oxford: Blackwell.
- Riding, P. (2001). Online Teacher Communities and Continuing Professional Development. *Teacher Development*, 5(3), 283-295.
- Rodgers, R. (2001). Reflection in Higher Education: A Concept Analysis. *Innovative Higher Education*, 26(1), 37-57.
- Rosenholtz, S. (1991). *Teachers Workplace*. Columbia University: Teachers College.
- Roskos, K., Vukelich, C., & Risko, V. (2001). Reflection and Learning to Teach Reading: A Critical Review of Literacy and General Teacher Education. *Journal of Literacy Research*, 33(4), 595-635.
- Ruddick, J. (1989). *Critical Thinking and Practitioner Research: Have they a place in initial teacher training?* Paper presented at the American Educational Research Association, San Francisco.
- Rudolf, J. W., Taylor, S. S., & Foldy, E. G. (2001). Collaborative Off-line Reflection: A Way to Develop Skill in Action Science and Action Inquiry. In P. Reason & H. Bradbury (Eds.), *Handbook of Action Research* (pp. 405-412). London: SAGE Publications.
- Sagor, R. (2005). *The Action Research Guidebook – A four-step process for educators and school teams*. California: Corwin Press.
- Schmuck, R. (1997). *Practical Action Research*. . Arlington: Skylight Training and Publishing Inc.
- Schon, D. (1983). *The Reflective Practitioner, How Professionals Think in Action*. London: Temple Smith.
- Selwyn, N. (2000). Creating a 'Connected' Community? Teachers' use of an Electronic Discussion Group. *Teachers College Record*, 102(4), 750-778.
- Steinhouse, L. (1975). *An Introduction to Curriculum Research and Development*. London: Heinemann.
- Tabachnik, B. R., & Zeichner, K. M. (1994). *Ideas and Action: Action Research and the Development of Conceptual Change Science Education*. Paper presented at the American Educational Research Association, New Orleans.
- Thies-Springthall, L. M., & Gerler, E. R. (1991). Support Groups for Novice Teachers. *Journal of Staff Development*, 11(4), 18-22.
- Vygotsky, L. S. (1978). *The Mind in Society*. Cambridge: Harvard University Press.
- Walkington, J., Christensen, H., & Koch, H. (2001). Developing Critical Reflection as a part of Teacher Training and Teaching Practice. *European Journal of Engineering Education*, 26(4), 343-350.
- Watzlawick, P., Weakland, J., & Fisch, R. (1974). *Change, Principles of Problem Formation and Problem Resolution*. New York: Horton.
- Zeichner, K. M. (1993). Action Research: Personal Renewal and Social Reconstruction. *Educational Action Research*, 1(2), 199-219.
- Zeichner, K. M. (2003). Teacher Research as Professional Development for P-12 Educators. *Educational Action Research*, 11, 301-325.
- Zeichner, K. M., & Liston, D. (1996). *Reflective Teaching*. New Jersey: Lawrence

Appendix A – Implementation Process

Implementation Process

Step 1 – Invite participants to take part in the research process.

The setting for the study took place in the supervisor's own school. Some of the staff had taken part in a mini-study similar to the present one conducted by the supervisor last year and therefore knew the outline of the present study. Staff were invited to participate and those who volunteered were chosen. The only pre-requisite was that they were familiar and comfortable with using websites. This decision was made for two reasons:

1. The time constraint did not give the participants time to become familiar with how to use technology.
2. The objective of the study was to evaluate the level of individual reflection and collaboration between participants, and not the extent to which participants got used to using website technology. If a participant was finding it difficult to use the technology, it may have impeded the extent to which they reflected on-line and thus affect the data collected.

The sample was therefore, self-selected and the participants were made up of four staff members, each teaching different subject areas and with different levels of experience.

Step 2 – Pilot the artefact

The artefact was piloted by a teacher not involved in the study. The objective of the pilot was:

1. To address any technical difficulties that may arise during the use of the artefact.
2. To ensure that navigation issues were addressed and that the user would find the website user-friendly.
3. To test the structured reflection format to ensure that the data entered would provide enough information for further reflections and subsequent decisions.

Step 3 – Preliminary meeting of supervisor and participants to outline the process and address any concerns.

A group meeting was held at the onset of the research process. The purpose of this meeting was:

- To briefly outline the research process and the teacher's part in it (the artefact would do this in detail).
- To demonstrate the artefact and answer any questions on navigation etc.
- To have a preliminary discussion on reflection, how to reflect, and what the outcomes of this process could be.
- To provide the participants with a forum to discuss any issues they may have with the study, or with the subject of the study.
- To obtain written permission from the participants to use the material they would enter on line, data from questionnaires, focus group interviews and semi-structured interviews.

Step 4 – Group meeting on reflective techniques

A meeting was held to prepare the participants for reflection. The artefact contained information on how to reflect and examples of reflections. This was explored with the participants and they were encouraged to read these links and to do some preliminary reflective exercises before reflecting on-line. Participants were also encouraged to ask any questions to discuss any queries they may have before embarking on the study.

Step 5 – Begin reflecting on-line.

Working as individuals the participants were asked to reflect on any issues that arose from their daily teaching lives. The reflections were to be entered as an on-line journal using the structured questionnaire. They were not directed to reflect on any specific issues such as discipline, problem students, curriculum issues etc.

They were free to reflect on any area of their teaching. Initially they were expected to enter at least two reflections per week. They were also told that the 'site' page on the website would change from week to week, providing them with a weekly update on what was happening with the study and what they were expected to do.

After two weeks of reflections, they were encouraged to read each other's entries and comment on them, thus introducing the collaborative element of the study. This continued for a number of weeks, with participants reflecting on-line.

Step 6 – Collaboration issues

After a number of weeks reflecting, the participants were not using the collaborative element of the website. In order to examine why collaboration was not occurring the researcher decided to:

1. Ask the participants to complete a questionnaire.
2. Hold a focus group meeting to explore collaboratively why this issue arose.

Step 7 - Decide on a course of action with the view to change in practice and implementation of that course of action.

A group meeting was held to discuss the action stage of the research process. The individual reflections were not discussed at this stage as this was primarily an information meeting. The artefact provided a forum for suggestions on a suitable course of action in light of the inputted reflections. This again gave the participants a chance to think in their own time and input their own suggestions.

Step 8 – Implementing the action and reflecting on the effects of this change in practice.

At this stage the participants entered the actions that they were going to implement in their classrooms and reflected on the rationale or basis for those actions in light of their previous reflections. They then implemented their actions.

The research cycle is now entering into the second phase or second cycle.

Step 9 - Second round reflections – reflecting on how the action went

These reflections were entered on the on-line artefact. The same assumptions applied as the first round reflections. The participants were asked to reflect on the implementation of the action, did change in practice occur and how did it happen.

Step 10 - Second round actions– ideas for a second course of action. Teachers views on how the first stage went

This completes the action research process and the use of the artefact in facilitating this process.

4. In what way do you find this activity helpful:

5. In your school, do you have any meetings (formal or informal) where teachers reflect together on particular issues with regard to their daily teaching lives? (This excludes staff meetings.)

- a) Regularly
- b) Occasionally
- c) Never

6. If you do, what are the benefits of these meetings?

7. If you don't, would you like to have these types of meetings:

- a) Yes
- b) No

Why?

Thank you for filling out this questionnaire.

Appendix C – Level and Depth of Reflections

Total number of reflection entries:

Participant	Number of reflections	Dates
1	8 (written outside of school hours)	8 th Feb, 9 th Feb, 9 th march, 22 nd march, 22 nd march, 19 th april
2	5 (written in school)	31 st Jan, 6 th Feb, 22 nd march,,
3	8 (written in school)	4 th Feb, 8 th Feb, 14 th Feb, 28 th Feb, 7 th March, 15 th March, 16 th April, 26 th April
4	4 (written outside of school hours)	9 th Feb, 3 rd March, 4 th April, 16 th April
Total reflections	25	

Majority of reflections done on Wednesday, Thursday and Friday

Criteria for the Recognition of Evidence for Different Types of Reflective Writing (Smith, 1992)

Criteria	Description
<p>Descriptive writing</p> <ul style="list-style-type: none"> • Not reflective • Description of events that occurred • No attempt to provide reasons/justification for the events. 	<p>Participant 1- 8/02 – mainly description of what took place in the class. Part 4 03/03 description of even regarding a discipline issue. Part 3 14/07 description of discipline issue</p>
<p>Descriptive reflection</p> <ul style="list-style-type: none"> • Reflective, not only a description of events but some attempt to provide reason or justification for 	<p>Part 1 – 08/02 – ‘however I tried a different approach’ (indicates an action). ‘too much to ask a junior class to block out this student for a full 45 mins’ Part 1 ----- ‘I see to be reflecting a lot on my 5th year class’ reflected on the issues and gave different viewpoints, Part 1 22nd march: reflects on problems and reflects on different actions they could take’</p>

<p>events or actions but in a reportive or descriptive way.</p> <ul style="list-style-type: none"> • Recognition of alternative viewpoints in the research and literature which are reported. • Two forms: Reflection based on one perspective or factor as rationale or recognition of multiple factors as rationale. 	<p>Part 4 03/03 ‘cannot get through to this guy that the work will have to done, his casual attitude is bugging me, can’t get seriousness of situation across to him’</p>
<p>Dialogic reflection</p> <ul style="list-style-type: none"> • Demonstrates a ‘stepping back from events/actions, leading to a different level of mulling about, discourse with self and exploring the experience, events and actions using qualities of judgements and possible alternatives for explaining and hypothesising. • Such reflection is analytical and integrative of factors and perspectives and may recognise inconsistencies in attempting to provide rationales and critique. 	<p>Part 1 08/02 – ‘maybe with time this approach will work’ Part 1 09/02 ‘something I have been mulling over for the last few weeks’ reflected on a problem and proposed a solution. Part 3 07/03 ‘I went too easy on some students for two reasons, firstly I felt that some pupils with learning difficulties may have genuine trouble with doing homework the second I took too soft an attitude’ I was angry with myself for allowing them to develop this attitude’ ‘this could be down to my own lack of confidence teaching a subject I never studied at third level and have little passion for’ Part 4 09/02 ‘I can’t seem to get it across to students that they need to figure out the next step themselves’ ‘The school as a whole mothers students to death to the stage that they are totally dependent on teachers’ Part 2 31/01 ‘quickly I realised if I argued with him I would have little hope of achieving anything’ ‘ the reason I did not start shouting at him was because I knew that I could not physically make him move unless he wanted to and the more attention he got the longer he was going to stay’ ‘not sure if it was a win or lose situation’ Part 2 06/02 reflecting on two levels in one class problem ‘finding it difficult to come up with a solution that would be fair to all the class’ describing a particular solution ‘however this simply doesn’t work with this group as they are easily distracted and begin talking, also both groups need help with the exercises I give them’ ‘this is something that has been bothering me for some time and I cannot seem to come up with a suitable arrangement’ ‘Am</p>

	<p>confused an annoyed that I cannot remedy this situation or come up with ideas’</p> <p>Part 2 ----- in relation to their action plan ‘I was always very reluctant to do it in case it all went horribly wrong’</p> <p>Part 3 07/03 in the same situation again I would be far more vigilant and thoughtful in the homework I give out’</p> <p>Part 3 08/02 ‘I found it difficult to strike a balance between allowing the kids to have fun and be creative, while at the same time maintaining order in the classroom’</p> <p>‘delighted that some of the students embraced the project and enjoyed it, but angry and confused that some would jeopardise the entire project and spoil it for the other kids’</p> <p>‘naively expected the kids to be grateful, yet some were apathetic, disheartening’</p> <p>‘would structure class to offer some template to follow’</p> <p>Part 3 14/02 from description to ‘angry and confused dealing with student who will give 0% return on effort and energy devoted to him....feel really sorry for the other students in the class whose education is suffering due to the actions of one student’ ‘I feel in the future my only option is to completely ignore his disruptive efforts and try to concentrate on the majority’</p> <p>Part 2 28/02 in relation to standard of work from 2 classes ‘I suppose I have preconceived ideas concerning the 5th years due to the fact that they are a non exam year and was very happy with standard of work, disappointed with 3rd years because after an enjoyable lesson they made absolutely no effort to consolidate what was learned via homework. ‘will have to plan the class better so that I can retain as much control as possible over the work undertaken both at home and in class’</p> <p>Part 3 04/02 in relation to an incident in class having described the incident ‘I think I would keep my composure and stand back for a moment and ask myself what is best for the class as whole right now before taking any action. However, I believe that the decision I would make would ultimately be the same one’</p>
<p>Critical reflection</p> <p>Demonstrates an awareness that actions and events are not only located in and explicable by, reference to multiple, historical and socio political contexts.</p>	<p>Part 1 08/02 ‘feel the better end of the class are being held back by me explaining and reexplaining similar problems because weaker students cannot get their heads around them (the problems’. ‘feel lack of understanding is due to these weaker students not putting the effort in’.</p> <p>Part 1 09/03 described a difficulty and reflected on own part played in the difficulty. ‘I have realised that they do not learn notes, or look back on them, if the answer does not come into their heads they will tell me they don’t</p>

	<p>understand and get their parents to write a note' 'you feel you are getting nowhere' 'see that weaker student respond well to project work, it is time to use different teaching methodologies and see if I get better results'</p> <p>Part 3 07/03 'I was surprised by the extent of which the different genders generally approach their homework and academic issues' 'none of the boys had completed the work at all'</p> <p>Part 4 04/04 'girls in class remark that they work is too hard and that they are not able to do it by virtue of the fact that they are girls and are therefore not meant to do it (a practical subject). Other girls in the class have not problems at all'. Action decided reflects on the issue and breaks down the problem, trying to find a solution to the issues the girls' have with the subject.</p> <p>Part 2 ----- 'having reflected on yesterday's class I think that the reason (the action) went so surprisingly well was because I prejudged the students level (again)', in relation stepping up the action that did not go as well 'thoughts: is it a classroom management problem or and not a language problem at all?'</p>
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Appendix D – Coding and Theming Process

Using Collaboration Questionnaires, Focus Group Interview and Transcript of interviews:

Reflection

Codes	Areas within the themes
<p>Prompts Rereading their previous reflections How does reflecting help What started the process of reflecting, what was the impetus Writing the reflections – easy/difficult Were specific areas of their teaching highlighted and how was it helped Further on you went the more comfortable you got with it</p>	<p>Process of reflecting</p> <p>How did the prompts facilitate the reflections? Rereading the last reflection does get you thinking, ‘sparks your thinking’. ‘definitely works’ Started as a chore, but then enjoyed it. While they did not write in reflections on their reflections – all participants did read their previous reflection before entering another one. Without the prompts – would have struggled to find a ‘frame’ to work on reflection Reflection helped them to clarify things. All knew what they were going to talk about when they sat down, but found the prompts very helpful in developing their reflections All participants read their previous reflections before they reflected each time – they said it did provide a spark for the next reflection. Rereading the reflections made sense. Frustrations during the day caused reflections? Actual writing of reflections – how did they find that? Rereading reflections – did it make any difference? Why did they not comment on their own reflections? Did the reflections highlight specific areas for participants Actual process of reflecting – did they enjoy it? What was the impetus that made teachers sit down and reflect?</p>
<p>Benefits of reflection</p> <p>Clear overview Looking at things from different perspectives Enjoyable</p>	<p>Very critical of yourself, tend to focus on negative rather than positive. Felt that they knew what they were supposed to do and had looked over the information areas on the website. Gives you ‘a clear overview of what happened.’</p>

<p>Reflection in action Tend to push things out of your mind – reflection made you think about them.</p>	<p>When reflecting ‘once you got to the computer, got caught up in it and found yourself looking at things from different perspectives’ All said that once they got to the computer, really enjoyed it, and also if structure was imposed, then it would become more of a routine and by doing it once or twice a week you could look forward to it and ‘enjoy’ it. All said that they would be thinking reflectively when an incident was actually occurring, or would think ‘this is a good situation for a reflection’, but then admitted that they did not make it from this stage to the website to enter the reflection. Without reflection would not have thought about as many incidents ‘ would have tried to get over it as quickly as possible’. .</p>
<p>Barriers to reflection and solutions to the barriers</p> <p>Teaching day involves thinking about next class, day, week, reflection not seen as a priority for teachers</p> <p>Time – one class period not enough</p> <p>Deadlines and structure</p> <p>Too many restrictions or demands offputting</p> <p>Hard to know how to write the reflections</p> <p>Reading previous and other participants reflections provide the spark</p>	<p>Again issue of preparing for the next class, if what you are doing seems to have to direct benefit to the class then it is not made a priority. Time factor in terms of perception – if Thursday had come and you had not entered any reflections, then said, oh I will start again next week and suddenly it was Thursday again. This was mentioned by 3 of the participants. Time an issue, would not get it done in one free class period. However, deadlines and structure are mentioned many times by all the participants. If too many restrictions were imposed then it could be offputting. Reflection is thinking about the past, teaching is about getting prepared for the next class, next day, the future etc. One participant said at the beginning she found it hard to know what to write about, but this was more in relation to the actual writing and what to say, rather than the situation she wanted to talk about. All participants read their previous reflections before they reflected each time – they said it did provide a spark for the next reflection. Found it frustrating trying to explain your specific subject area problem to teachers of different subjects. Once you made up your mind to sit down, then there were no problems once you were there and the time flew, it was the sitting down bit was the problem?</p>

<p>Common themes within subject or class areas</p> <p>Getting to the point of writing difficult</p>	<p>Time issues? Once they sat down it just flew</p> <p>Structures put in place?</p> <p>Deadlines and time limits put in place?</p>
<p>Reflecting as a teacher</p> <p>Adding more layers to an already busy life</p> <p>Thinking about past – teachers thinking about the future</p> <p>What did they learn about themselves as teachers?</p> <p>Part of every day teaching</p> <p>What did it really mean to them as teachers?</p>	<p>Too much like work, adding more layers of work onto an already busy day.</p> <p>Reflection is thinking about the past, teaching is about getting prepared for the next class, next day, the future etc.</p> <p>Did they learn about themselves as a teacher having reflected?</p> <p>What did the different teachers focus on in their reflections?</p> <p>Did reflection become part of their everyday teaching?</p> <p>Reflection – what did it mean to teachers?</p>

<p>Barriers to reflection and solutions to the barriers</p> <p>Teaching day involves thinking about next class, day, week, reflection not seen as a priority for teachers</p> <p>Time – one class period not enough</p> <p>Deadlines and structure</p>	<p>Again issue of preparing for the next class, if what you are doing seems to have to direct benefit to the class then it is not made a priority.</p> <p>Time factor in terms of perception – if Thursday had come and you had not entered any reflections, then said, oh I will start again next week and suddenly it was Thursday again. This was mentioned by 3 of the participants.</p> <p>Time an issue, would not get it done in one free class period. However, deadlines and structure are mentioned many times by all the participants.</p> <p>If too many restrictions were imposed then it could be offputting. Reflection is thinking about the past, teaching is about getting prepared for the next class, next day, the future etc.</p>
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<p>Too many restrictions or demands offputting</p> <p>Hard to know how to write the reflections</p> <p>Reading previous and other participants reflections provide the spark</p> <p>Common themes within subject or class areas</p> <p>Getting to the point of writing difficult</p>	<p>One participant said at the beginning she found it hard to know what to write about, but this was more in relation to the actual writing and what to say, rather than the situation she wanted to talk about.</p> <p>All participants read their previous reflections before they reflected each time – they said it did provide a spark for the next reflection.</p> <p>Found it frustrating trying to explain your specific subject area problem to teachers of different subjects.</p> <p>Once you made up your mind to sit down, then there were no problems once you were there and the time flew, it was the sitting down bit was the problem?</p> <p>Time issues? Once they sat down it just flew</p> <p>Structures put in place?</p> <p>Deadlines and time limits put in place?</p>
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Collaboration

Reason for not collaborating	<p>The word ‘uncomfortable’ came up many times in relation to commenting on each other’s reflections.</p> <p>One participant did not comment on the other’s because she taught even though the problems were the same, the subject areas were so different.</p> <p>Also, if you got the wrong reaction you could qualify your comment with another comment. Writing down comments too ‘black and white’</p>
Commenting on each others reflections	No one had an issue with others commenting on their reflections.
The artefact	How the artefact facilitated or did not facilitate
Other forms of collaboration	<p>Much prefer face to face collaboration but use the reflections to be the basis for the collaboration meetings.</p> <p>Face to face meetings very good.</p> <p>Maybe common subject teachers or teachers from the one class might be more beneficial or condusive to collaborating.</p> <p>Why did 3 out of 4 participants look at the other participants entries first ?</p> <p>Did they get any support from this activity? Why?</p>

	<p>Staff room and staff meetings do not provide a forum for this type of collaboration – not constructive enough. Too much ‘giving out’ and not enough ‘well what will we do’.</p> <p>Might have been easier if there had been a common link. More comfortable face to face, could read peoples expressions, a shrug, hesitation etc.</p> <p>All had read each others comments and found it helpful in terms of reflection and also one said it was ‘comforting’ to see teachers with same problems as her.</p> <p>One participant found it interesting in how everyone had similar issues or talked in the same way about things.</p> <p>Reading other teachers’ comments was very helpful, but still would not have written suggestions.</p> <p>.</p>
Level of depth of collaboration	
Trust	<p>None of the participants used the ‘private reflections’ link, could indicate no issues with trust.</p> <p>While the website was set up to be anonymous, all the participants identified themselves in some way, again, suggesting trust between them.</p> <p>Explore the link between trust and non collaboration</p> <p>Talk about preliminary meetings</p>
Reflection as a viable option for teachers in future	<p>If you didn’t have to – would you?</p> <p>If you were made do it as part of your job you would – you would just get used to it.</p> <p>But it would be just one more layer of red tape.</p> <p>Although expresses that they enjoyed the activity one teacher said ‘ I enjoy my work, but I don’t want more of it!’</p> <p>It takes up a lot of time – bullet points first?</p> <p>First timers would find reflecting hard as an activity?</p> <p>Could work but would have to timetabled as part of the working week.</p> <p>As teachers the day is set out for you and you are part of a very definite structure, in order for reflection to work as a regular activity, must be a target, a definite time to put in reflections, structure.</p> <p>Thinks that he will think about things more now, not sure about reflecting, but will certainly think constructively about a problem rather that just getting angry.</p>

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Action decisions and change in practice

Did they learn about themselves as teachers	Yes 'laughed' at the idea that the students did not realise that they were guinea pigs. Being part of the study really did make a difference.
How did the artefact contribute to the process	Have done conscious actions in the past, but have not reflected on them, then forgot what had happen, positive or negative. Used artefact to keep reflections and used it to write about actions and reflect on them
Did the reflections feed into action decisions	Action decisions did feed directly from reflections in 3 of the participants, the 4 th said that although he had not written in the reflection, being part of the process 'definitely' produced the idea for the action. Also some found they were doing little actions subconsciously and only realised this when they were talking to me. Had not reflected about it. Put this subconscious activity down to the study. Reflection was integral to the change in practice decision, also by making the 'conscious decision to write it down make you see if it worked or not'.
Did change in practice happen	Yes, for all of them
Time limitations	Very good, but too short, would have needed another term to fully appreciate how the action was going.

Artefact

<p>How did the participants use the website</p>	<p>How the participants used the website – 3 out of 4 looked at the other participants reflections first. All looked at their own previous reflections before reflecting themselves Did not look at the site page much – how did that affect their participation in the study – why did they not – was it that they got used to what they were doing, lazy or were not aware of the importance of the site page. Usage habits? While instructions on how the process was going and what was expected of the participants was posted each week on the website, one participant said that it was not enough, needed to be told in person as well. Did look at it the first few times and then went straight to the reflections – suggests that there was not enough of a ‘pull’ to the site page. Structure ‘brilliant’. Prompts helped develop ideas.</p>
<p>Opinions of the website</p>	<p>All found website very clear, ‘fantastic’, easy to navigate and ‘professional’ Would use this as a tool for the future and found it useful.</p>
<p>Technology issues</p>	<p>Two participants moved house during the study and had no internet link for most of that time, found this affected the number of times they reflected on line, could suggest that there is some merit for the website in that the school day does not allow time for reflecting.</p>

Appendix F – Questionnaire Results

Questionnaire results:

Participant One

Question 1 – have you read any of the other participant’s reflections:

Participant	Yes/No	Why	Elaborate
1	Yes	Curious, see comparisons with other reflections	Curious to see if people were having the same problems, and if how they were handling them.

Question 1.2 – Having read the reflections, why did you not enter any comments on them?

Participant	Why	Elaborate
1	Felt uncomfortable about commenting on colleagues reflections. Did not know what to say.	Time was a bit of a problem. A little bit of ‘who was I to make suggestions’ as I have or will have the same problems. However, if I was really confident about a possible solution I would have made it.

Question 2 – Any suggestions that would entice you to collaborate?

Participant	Answer
1	No entry

Question 3 – How do you feel about other participants commenting on your reflections?

Participant	Comments
1	I would welcome any comments absolutely no problem with it.

Question 4 – Are there any benefits to collaborating on-line or do you think the staffroom provides enough of an opportunity to talk about issues that you are dealing with daily or within this study?

Participant	Comments
1	Yes – on line collaboration works, except time is a problem. Staff room talk is too casual, some people just use it as a means of relieving stress, repeating every detail of incidents. No constructive recommendations emerge from it. Also vocal staff dominate these discussions.

Question 5 – Have you any suggestions regarding the issue of collaborating on-line?

Participant	Comments
1	I think the reflecting part of it worked well on line. Teachers don't stand back from their classes and evaluate them. Having to think about your classes and pin point areas of concern, makes you more focused. This is something you need to do in your own time and space. Maybe group meetings would be of benefit to come up with ideas or solutions. The discussion of these meetings would be on the reflections, so people are not going off on a tangent. It would be easier to comment on people's reflections face to face, writing down your suggestion makes it formal. Possible following the meeting the teacher could then outline the action on line.

Question 6 – Any further comments.

Participant	Comments
1	This project was definitely worthwhile. It made me reflect on classes, something I haven't seriously done since the HDip. Reflecting does make a difference to the success of your class and future classes as you are more focused, proactive rather than reactive.

Participant Two

Question 1 – have you read any of the other participant’s reflections:

Participant	Yes/No	Why	Elaborate
2	Yes	Curious, see comparisons with other reflections, other reason	I wanted to see what others were writing in order to see if I was writing was the right kind of stuff

Question 1.2 – Having read the reflections, why did you not enter any comments on them?

Participant	Why	Elaborate
2	Felt uncomfortable about commenting on colleagues reflections. Did not know what to say.	No entry

Question 2 – Any suggestions that would entice you to collaborate?

Participant	Answer
2	It was difficult to write comments about somebody else on the computer as you’re not sure how they will take it or perhaps they might take you up wrong. Maybe if collaboration could be done in a group meeting where you see a person face to face. I know this defeats the idea of on-line reflection and collaboration.

Question 3 – How do you feel about other participants commenting on your reflections?

Participant	Comments
2	I don’t think I would have minded as I’m sure it would have been in a “The same thing happened to me” kind of comment instead of a “here’s what you should do comment”. I think collaboration of this nature happens in the staff room amongst various groups (not necessarily between this research group) and I generally find it helpful to air my problems with students and to hear others have similar problems with students and what they have done.

Question 4 – Are there any benefits to collaborating on-line or do you think the staffroom provides enough of an opportunity to talk about issues that you are dealing with daily or within this study?

Participant	Comments
2	I think there are definitely benefits of collaborating, whether online or just informally. It is good to know that you're not the only one who really wants to wring some 1 st years necks. However, this said I don't think the staffroom provides enough time to do this, as the person you might feel most comfortable moaning to is at class etc. so you end up not mentioning it at all. Also you don't want to come across as a constant moaner who never has anything good to say in the staffroom, and who does nothing but give out.

Question 5 – Have you any suggestions regarding the issue of collaborating on-line?

Participant	Comments
2	I think to put all my answers together. There should be more collaborating in the teaching profession, but in a structured way like on-line, however in order to do this people need to be more comfortable with the ideas of discussing ideas and problems through the medium of the internet. As the age old face of interaction seems to cause a lot of hassle we are all just rushing here and there. (Maybe, with the younger teachers coming on stream and more at ease with technology, they may embrace the on-line aspect more fully.)

Question 6 – Any further comments.

Participant	Comments
2	I think if we had more time in the week to do this, it would have been very beneficial.

Participant three

Question 1 – have you read any of the other participant’s reflections:

Participant	Yes/No	Why	Elaborate
3	No	Time pressures, other	It takes me approx, 30-40 minutes to enter any reflection. I find this valuable and see it as time well spent as it really does make you think about situations. However, once I have entered my reflections I see it as a job well done and time to move on.

Question 1.2 – Having read the reflections, why did you not enter any comments on them?

Participant	Why	Elaborate

Question 2 – Any suggestions that would entice you to collaborate?

Participant	Answer
3	I suppose it really is time constraints. I am not particularly adept at organising my own time. If there was a set time or deadline to enter reflections eg. no.1 reflection to be entered before 12.am Wednesday and no.2 to be entered before 4pm Friday I think I would participate more fully than I have. The relaxed approach did not suit me personally as I need a regular kicking to keep on top of things. Just like our students I need discipline and structure imposed. Not too forcefully, but regular reminders.

Question 3 – How do you feel about other participants commenting on your reflections?

Participant	Comments
3	I would be mildly curious about what the other participants would have to say regarding my reflections but not overly concerned. I felt that I, and to a certain extent teachers in general, are quite ego-centric in that we are focused on the particular job we are there to do. While we do show a superficial interest in, and sympathise with, the problems, successes and

	failures of other teachers, we are too focused on our own environment to become actively involved.
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Question 4 – Are there any benefits to collaborating on-line or do you think the staffroom provides enough of an opportunity to talk about issues that you are dealing with daily or within this study?

Participant	Comments
3	The benefits of working on-line are obvious eg. the anonymity of working on line allows one to express opinions and feelings that may not express in a public environment. However, I do not believe that it (on line collaboration) can be a substitute for face to face collaboration that allows people to bounce ideas off each other in a more immediate way. Also the obvious benefits of being able to read people’s moods and body language concerning their thoughts on a subject are invaluable.

Question 5 – Have you any suggestions regarding the issue of collaborating on-line?

Participant	Comments
3	As I have mentioned already in the survey I believe that a more rigid time frame could entice participants to input information more regularly. When deadlines are put in place, even arbitrary ones, I feel people have more motivation to participate in the study.

Question 6 – Any further comments.

Participant	Comments
3	The only comment I would make is that I have not clearly expressed my appreciation for the reflection process. I think that entering reflections provided me with an opportunity to think about the way I teach, how to teach and how students learn, in a way that I have not considered since the HDip course.

Participant four

Question 1 – have you read any of the other participant’s reflections:

4	Yes	Curious, see comparisons with other reflections	I think that seeing how other teachers get on reassures me that it’s just me with difficulties. I feel lost and alone and this study has helped me to recover from this.
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Question 1.2 – Having read the reflections, why did you not enter any comments on them?

4	Felt uncomfortable about commenting on colleagues reflections.	Teachers are very alone in their work. They are the boss behind the closed classroom door. As a teacher I feel it is off limits to comment on other teacher’s work. This is not a good situation to be in. I think communication between teachers can only be positive. I have seen this already from the study.
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Question 2 – Any suggestions that would entice you to collaborate?

4	Working within subject departments might be a good place to start. There is a vast amount of experience and knowledge amongst teachers. It could only be beneficial to tap into this.
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Question 3 – How do you feel about other participants commenting on your reflections?

4	No comment N/A
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Question 4 – Are there any benefits to collaborating on-line or do you think the staffroom provides enough of an opportunity to talk about issues that you are dealing with daily or within this study?

4	On line offers more real reflection. You can be more honest and subjective/objective rather than talking face to face.
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Question 5 – Have you any suggestions regarding the issue of collaborating on-line?
No comments

Question 6 – Any further comments.
No comments

Appendix E – Guidelines for semi-structured interview

Semi-structured Interviews - Question Guidelines

Reflection

Had they ever reflected before – other study, hdip – how did they find it?
Ask about the areas they reflected on – expand – did they find as they wrote more it became easier?
Did they enjoy it as an activity? Or did they find it hard work **They must have found it hard work – explore why – do they not like writing, thinking in a deep way about things, rather not think about things etc.**
When they did reflect – what made them go to the computer at that time?
What would encourage them to reflect more
Did it help clarify your thoughts or did it just bring up more questions
Time/effort/energy demands – what were they?
Time seem to be a factor – explore?
Was the fact that it was part of a study for me contribute to the lack of interaction – there was no real goal – if it was part of a course or a schoolwide initiative would that have made them reflect more?
The idea that if they had set time periods to reflect would have made them reflect more – they did – and yet it made no difference
Can reflection be part of a teachers life?

Collaboration (mainly covered in focus group interview)

In your questionnaire you said: can you elaborate?
There were obviously challenges about collaboration and commenting on your peers reflections – what were those challenges?
Do you think the public forum of a website had any effect on collaboration?

Most of you expressed that you did not like commenting on what other teachers wrote, even though you were not going to write anything negative – why did you not want to interact

When you read other peoples reflections, did you not feel that by responding you could have been helping them in some way, or did you feel that you could not help them

Action Research – actions/ part of research etc

Actions they took – how did they find that element of the study?

What would they have done differently?

Can reflecting really pinpoint areas that will result in actions which in turn will result in a change in practice?

Did you feel that you that were actively researching your own situation or were you just doing what you were told?

Do you think as a teacher you are interested in taking part in researching your own school with other teachers and finding out about issues that are taking place or are you just happy to let the status quo do the talking and you just go with the flow?

How do you think as a teacher that you can be part of finding the solution to the problems in the school?

Did you feel that your reflections fed into your action decision?

How did the action go – were you surprised at the results or did not see any change at all?

Did you learning anything about yourself as a teacher from doing the study and what will you do differently as a result of that learning?

If you learnt nothing – why do you think that was?

Artefact

How did the artefact contribute to the process of reflecting – good or preferred to keep a journal?

What did they think of the design of the artefact – any suggested changes? What was good about it, bad about it?

Did you find the prompts helpful or did they constrict you in any way?

How did you feel about entering your reflections on-line – did it have any benefits?

It was mentioned in the interviews that you could have just entered the reflections in a notebook – did the technology aspect have any particular advantages?

Overall

Having gone through the process – what aspects of it did they enjoy, or feel that helped them as a teacher?

If I was to run the study again what would I do differently?

What did you want to get from the study when you agreed to take part in it or were you just doing it as a favour to me

What did you expect the study would be like

Do you think there is a place for this type of process in our lives as teachers – in the end do we really want to become reflectors.

Appendix G – Example of coding and theming interview transcript

Appendix H – Consent Form

December 2006

Dear Participants

Thank you for agreeing to take part in this study on teacher collaborative reflection.

You will be required to use the on-line artefact to enter collaborative reflections. You will be asked to attend a small number of meetings, to participate in a semi-structured interview and possibly complete a questionnaire.

Confidentiality regarding this data is guaranteed, however, quotes may be used in the thesis to substantiate findings.

Thank you for agreeing to participate in this research

Sandra O’Toole

I give my consent to participate in the above research investigation and for any data provided by me to be used by the researcher.

Participant Name; _____

Date: _____