# Reflective practice in adult numeracy professional development

## Valerie Seabright

Institute of Lifelong Learning, Queen's University,Belfast

v.seabright@qub.ac.uk

*Queen's University, Belfast, Essential Skills Project team, sponsored by the Department of Employment & Learning(DEL), Northern Ireland, has developed a suite of professional development programmes in Adult Numeracy and Adult Literacy . These are all accredited by the University in line with the national standards laid down by the U.K.*

*The courses designed at Queen's are predicated on a view that reflective practice is essential to improving teaching and learning. Tutors are encouraged to reflect on their own individual learning and practice in the numeracy classroom. A reflective journal is produced to focus critical analysis of experiences both in their learning situation on the programme and the impact on their learners in the adult numeracy classroom.*

*This paper will reflect on reflective practice models, and will report on some of the experiences of this year's cohort.*

This paper describes and reflects on the reflective practice on which the Essential Skills tutor professional development programmes at Queen's University are predicated. More specifically the role of reflective journal writing in the process will be explored although this forms only part of the whole process of guided reflective practice.

In order to contextualise the practice some background is necessary. It was revealed in Northern Ireland in the IALS survey in 1994-6 that more than 20% of the adult population had the lowest skills in literacy and numeracy. Following the lead of the Skills For Life Strategy in England the Northern Ireland Department of Employment and Learning, responsible for the training and education in post compulsory education, developed the Essential Skills for Living Strategy in 2002. This adopted the standards and core curriculum developed in England as well as the development of a professional tutor base. Queen's University was commissioned to set up professional certificate qualifications based on Adult Numeracy and Adult Literacy level 4 Subject Specifications endorsed by FENTO (Further Education National Training Organisation, now LLUK (Lifelong learning UK). Diploma programmes were then developed to incorporate teaching and learning standards endorsed by FENTO. This then provided a subject specific teaching qualification within the Essential Skills field, qualifications now compulsory for new and existing unqualified practitioners in Northern Ireland in Adult Literacy and Adult Numeracy.

The underpinning theoretical framework adopted at Queen's was based on the development of reflective practice to develop critical practitioners, enhance classroom practice and the adult learner experience.

Critical thinking was seen as an element needing development but raised some questions. What is critical thinking? What are the characteristics of a critical thinker?

## Critical thinking

Critical thinking is a positive and productive activity defined by Brookfield who portrays critical thinkers as self confident about their potential for changing aspects of their practice both individually and collectively. It goes beyond the narrow subject oriented learning. As Brookfield claims 'When we think critically we become aware of the diversity of values, behaviours, social structures and artistic forms in the world' (1987).

Critcal thinking is a process not an outcome, involving a conceptual questioning of assumptions and is manifested in different contexts triggered by either negative or positive events. It can be emotive and/or rational but the emphasis is on critical. Concepts of critical thinking imply critical analysis, awareness, consciousness and reflection. It can, in some circumstances, be exhortatory and vague where any interaction with a learner can be said to assist critical thinking.

Discussion in the literature on critical thinking can be divided into at least three distinct categories involving either characteristics of critical thinking, assessment of critical thinking or attributes required for critical thinking. In the first category critical thinking is discussed in terms of the characteristics of logical reasoning ability, application of reflective judgement and assumption hunting (Hallett, 1984; Kitchener, 1986; Scriven, 1976). Hullfish and Smith (1961) go further and discuss the creation, use and testing of meaning as being critical thinking. Ennis (1962), also in this category of assessment, has developed tests on at least twelve aspects of critical thinking including analytical and argumentative capabilities, recognition of ambiguity in reasoning. D'Angelo (1971) has developed a list of attributes required for critical thinking including flexibility, scepticism and honesty.

Critical thinking can be seen as a not wholly rational mechanical activity. There are emotive aspects, feelings, emotional responses, intuition and sensing. There is a view that critical thinking is inherent in emancipatory learning (Apps, 1985), evident in learners becoming aware of the forces bringing them to the current situation and taking action to change some aspect. Apps describes emancipatory learning as freeing people from forces that prevent them from seeing new directions and from taking control of their lives, and society.

Dialectical thinking is seen as a form of critical thinking, focusing on understanding and resolution of contradictions (Morgan, 1986). Dialectical thinkers are continually making judgements about aspects of their lives, identifying rules implicit in judgements, modifying those judgements in the light of the appropriateness of the rules.

Being a critical thinker means more than the use of cognitive activities such as logical reasoning and scrutiny of arguments for assertions which are unsupported by empirical evidence. Thinking critically involves recognising underlying beliefs and behaviour. Boyd & Fales (1983) include a reflective dimension which is evidenced by internal exploration of an issue or concern, triggered by an experience which clarifies meaning in terms of self, and which results in a changed conceptual perspective.

Boud, Keogh and Walker (1985) discuss reflection as a generic term for intellectual and affective activities where individuals explore their experiences in order to lead to new understandings.

Identifying and challenging assumptions results in a major shift in the way of thinking where a contextual awareness is developed involving the consideration of alternatives leading to a development of a particularly critical mind and reflective scepticism, which applies a cautious intelligence to ideas but is not wholly cynical.

So, critical thinking can be seen as analysis and action, a process of active inquiry combining reflective analysis and informed action.

Dewey (1933) interpreted critical reflection as arising out of 'perplexity and doubt' but also emphasised the place of negative triggers (not just trauma). Moments of self awareness can be triggered by fulfilling as well as distressing events.

## Developing critical thinking

Developing critical thinking in the context of professional development at Queen's means a development of a supportive methodology. According to Meyers:

> Teaching students new thinking processes involves gauging very sensitively the amount of disequilibrium that will do the most good. Too much can overload the students and be dysfunctional, while too little can result in warm, wonderful classes where no learning takes place (1986).

Students need to be able to challenge old ways of thinking and structure and develop new ones, which might mean taking risks. Freire (1970) contributes to this debate in his description of liberating classrooms where learners break free from habitual patterns of thought to view the world in new ways. Freire also includes characteristics of critical teaching involving competence, courage, risk taking, humility and political clarity which imply good communication, the ability to withstand resistance and the challenging of assumptions where teachers 'nudge learners from uncritically accepting ways of looking at the world.' Risk taking involves taking risks in experimentation in one's own teaching and political clarity requires an ability to break free from perspectives imposed by oppressive groups so one can see the inequitable, hierarchical relationships in society.

Meyers (1986) suggested building on learner's experiences and existing mental structures to move from the more concrete operations to abstract and reflective ways of thinking.

To develop critical thinking requires a model (or models) in teaching which is reflected in lectures: clarity, consistency, openness, and an ability to question, as the teacher, one's own communicativeness. The teacher would explain reasons for actions and would reflect publicly on reactions to other people's ideas and suggestions. The

teacher therefore needs to reflect an interpretative behaviour not a replicatory response. Accessibility to ideas should be evident, open to inquiry not intimidatory or threatening when assumptions are questioned.

Critical questioning elicits assumptions underlying thoughts and actions. It enables framing of insightful questions and explores issues in a more meaningful way. Language needs to be clear, concentrating on the specific and moving from the particular to the more general. General themes can then be addressed in the context of specific descriptions which encourage discussion. Initially it may be conversational but moves from the critical event to the critical analysis over time.

In reflective teaching, one needs to confront one's own practices and beliefs in order to take a more critical and analytical role. This is a difficult challenge – the encouragement of experimentation and investigation in the classroom in a situation where mathematics is seen by new tutors (as a result of previous experience) as a fixed body of knowledge, correct and teacher led! There is potential conflict. One view of learning suggests we only change when confronted with, and recognise, problems, conflicts and failure. Being able to learn from experience requires time to identify and describe the experience and to explore possible alternatives.

Kolb (1984), in his learning cycle, describes the importance of gaining experience, observing and reflecting on the experience and then developing and experimenting with the ideas. New tutors are encouraged to move from the experience in the classroom to develop new ways of thinking to change behaviour. One way is to return reflectively to the experience where particular incidents occurred. They then attend to the feelings about the incident, look for alternatives and re-examine the experience.

Reflective practice sharpens attention to what is happening in the classroom, notes and records singular events and works on them to learn as much as possible regarding the learners. Critical incident analysis gives an insight into the role and learning of the teacher.

Schon (1983) developed a notion of the reflective practitioner, rejecting the distinction between practitioners who could be trained and theoreticians who did research, innovated and carried out training. He talked about questioning and criticising leading to decision making. Reflection can be seen as strategies of action, understanding of phenomena in everyday life. When surprises occur leading to uncertainty and values conflict the practitioner, according to Schon, this calls on reflection in action – a questioning and criticising function. He claims reflective practitioners need a consciousness regarding reflection but exhortation to become reflective could miss the point. Schon contributes ideas for stimulation of the consciousness. Observation tasks offered by peers and experienced colleagues, small studies or interviews, comments and thoughts from observers and     participants on incidents, discussion, evaluation and critical analysis are all part of his model. These are all included in the Queen's model.

Dewey (1933) particularly relates reflective thinking to 'a state of doubt, hesitation, mental difficulty in which thinking originates, an act of searching, hunting, enquiry to find material that will resolve the doubt, settle and dispose of the complexity'.

## The approach at Queen's

In the context of professional development at Queen's, there is an attempt to develop dialogue between the teacher and the individual trainee tutors and as a group. Through discussion and dialogue the barriers of dependency are broken and the move from isolated learning is offered. A sense of ownership and encouragement of critical development is engendered. Use of groups to solve problems, to question and respond is  frequently visible. Tutors are encouraged to articulate points of view, listen to others, ask appropriate questions and respond. The dilemma for the teacher is that while building confidence in the use of mathematics and learning theories, one is also challenging ideas which can be problematic.

Writing is one process included in the programmes at Queen's. Tutors are encouraged to write a journal which examines not just the mathematics but is a critical reflection of their experiences of their learning on the programme both in the classroom as learners but also in the classroom of their learners. They reflect on their own learning, understand mathematics anxiety, concepts and techniques and help solve problems. It can become a discourse on mathematics and pedagogy as well as a concrete record of mathematics. The journal is introduced in the first few weeks of the programme following exploration of learning theories including Kolb 'concrete experience, reflecting (stepping back), reviewing and reflecting on the experience critically, conceptualising, interpreting and understanding events and using new understanding to refine the approach.' The process involves individuals attempting to understand their own experiences and to modify behaviour but fundamental to the process is a commitment to the learning and exploring process, a valuing of one's own experience and some guidance in structure to avoid total randomness.

The journal requires tutors to consider the process of learning, metacognition and the ability to monitor one's own current state of learning. Flavell (1987) describes three elements in metacognition:

- Person variables;

- Task variables

- Strategy variables.

In the context of the Queen's tutors, this involves the individual and his/her awareness of individual cognitive capacities and others' cognitive capacities; the nature of the task and how the tutor's understanding of how this should influence a learning strategy; and finally a strategy to reach the goal.

Moon (1999) suggests that learning at this stage involves developing control over the cognitive structure and clarity in the process of learning and representing of that learning. She suggests that a learning journal represents what has been learnt but develops more learning through the actual writing. Salisbury (1994) and Hayes (2005) regarded reflective journals in teacher training as self flagellatory. This is not the case at Queen's, the purposes are explicit:

- To record and reflect on experience on the course

- Record and reflect on theories introduced on the course

- Provide evidence of engaging in the learning cycle

- Record and reflect on insights on teaching and learning process

- Record and reflect on awareness of numeracy and mathematics

- Reflect on application of theories in context of management of learners

Recording of the learning enables a tutor to reflect, analyse and test assumptions in the classroom, reflecting on the experience, drawing conclusions and thereby engendering a deeper understanding of theoretical knowledge. It provides a means of consolidating learning, moving from initial acquisition to deeper and more meaningful understanding.

Swedish research discussed surface and deep learning. Deep learning intends to understand meaning conveyed by the lecturer, intends relating meaning to current knowledge and meaning may be added to understanding and may require modification of the cognitive structure(what they know). It is probably automatic, according to the research, if learners are interested and motivated, further knowledge is sought and learners learn lessons from experience. Surface learning on the other hand is where there is no intention to understand and own knowledge , it is more for learning by necessity, the easiest way, memorising facts and ideas, the individual is not interested in how new learning relates to what is already known. Surface learning can be unconnected learning where the intention is to hold onto ideas only sufficiently long enough to reproduce material. Surface learners tend to be isolated and not coherent in their approach. Deep learners appreciate the structure of ideas and may work with meaning to create new learning.

Reflective writing involves reorganising ideas in deep learning, it occurs when one rethinks, and reflects on what is meant. Lectures do not often give the opportunity for deep process of learning at the time – insight deepens later when ideas are rethought in reflective writing.  Initially journal entries may be colloquial, with limited use of academic language and in the form of diary or log rather than as entries which are tools for more reflection and comprehension.

Since journals are constructed as a record to connect understanding and learning they can be very personal and each tutor's journal is different. The assessment of an individual journal is on the evidence of the reflective thought and quality not the quantity of entries.  However one dilemma is that assessing of the journal at all might skew the contents to suit the assessor rather than the author. This relates back to the openness required in the programme in order to engender an honest approach both by the teacher and trainee tutors. This is where risk is seen. Teachers have to be aware that the critical analytical approach they are encouraging might raise sensitivities to their own delivery of theory and practice which comes under scrutiny of the trainee tutor.

Trainee tutors are advised to make notes as soon after the experience as possible, to capture the event and add their own affective and emotional responses before deeper reflection takes place. Moon (1999) suggests the journal 'enables the focusing and ordering of thought, ownership of the writing, and the expression of the learner's emotions'.

A benefit of regular reflective writing is that it enables experiences, thought, questions, ideas and conclusions to be documented. If we want students to develop a scholarly approach to teaching it requires a critical approach to

teaching and learning. The journal can be a vehicle to assist in the appreciation of the process, we learn when we absorb information, when we think about it, when we make sense of it and when we fit it into what we already know and this might mean changing or confirming what we knew but the learning reflects how and where we apply the new knowledge.

# References

Apps, J. W. (1985). *Improving practice in continuing education*.  Jossey-Bass.

Boud, D., Keogh, R., & Walker, D. (1985). *Reflection: Turning experience into learnin*g. London: Kogan Page

Boyd, E. M., & Fales, A. W. (1983). Reflective Learning. *Journal  of Humanistic Psychology*

Brookfield, S. (1987). *Developing critical thinkers*. UK: OUP.

Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educational process.* Chicago.

Ennis, R. H. (1962). A concept of critical thinking. *Harvard Educational Review 32* (1) 81-111

Flavell, J. (1987). Speculations about the nature and development of metacognition, In F. V. Weinett & R. Kluwe Hillsdale NJ

Freire, P. (1970). *Cultural action for freedom*. Cambridge, Mass.

Freire, P. (1970). *Pedagogy of the oppressed.* NY.

Hallet, G. L. (1984). *Logic for the Labyrinth: A Guide to Critical Thinking*. Washington, D.C: University Press of America

Hullfish, H. G., & Smith, P. G. (1961). *Reflective thinking: The method of education*. Westport: Greenwood Press

Kitchener, K. S. (1986). The Reflective Judgment Model: Characteristics, Evidence, and Measurement. In R. A. Mines & K. S. Kitchener (Eds.), *Adult Cognitive Development: Methods and Models*. New York: Praeger.

Kolb, D. (1984). *Experiential learning as the science of learning & development*. Prentice Hall

Kolb, D. (1984). *The Process of experiential learning*, NJ Prentice Hall

Moon, J. (1999). *Learning Journals*. London: Kogan Page

Moon, J. (1999). Reflection *in learning and professional development*. London: Kogan Page

Morgan,G. (1986). *Images of organisations*.  California: Sage.

Schon, D. A. (1983). *The Reflective Practitioner*. Basic Books inc.

Schon, I. (1980). *Critical thinking and everyday life*. Boston: South End Press.

Scrivener, M. (1976). *Reasoning*.  New York: McGraw Hill.