

## Section B: Embedding Formative Assessment

### Unit 2: Making thinking explicit

## Personalised Learning: a guide for teachers

### Introduction

What is 'Personalised Learning' and how can learning be personalised? There are many pathways into personalisation and this guide explores some of these.

This guide focuses on:

Personalising for learning by providing support for learning via:

- dialogic teaching
- developing creativity
- teaching for thinking
- assessment for learning

Personalising for pupil engagement with learning via:

- student voice

Personalising learning environments via:

- school review

Personalising teaching via:

- personalised research

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### Introduction: What is personalised learning?

'Personalised learning demands that every aspect of teaching and support is designed around a pupil's needs.' (David Miliband 2003)

Teachers actively design their teaching to meet the needs of students, but they are not always entirely successful in this and some needs of some students sometimes go unmet. The challenge of personalised learning is this: can more be done to meet the learning needs of all students?

Personalising learning is a process that:

- reinforces some current practices in schools and classrooms
- requires modifications to some current practices
- results in creating some new practices.

Personalisation has been treated as a version of what is called customisation in the business world, where in the last century there was a transformative change from Henry Ford's readiness to offer his customers a car

of any colour, as long as it was black, to the revolution in the automobile industry created by the Japanese, whose success depended in part on putting the customer first and recognising that innovation should be user driven, the better to meet their needs and aspirations. However personalisation is more than just a consumer-led approach to education.

The personalisation of learning - putting the student or learner at the heart of the process has always been the essence of effective education and of lifelong learning (Fisher 2005). It has a moral basis in the fact that education is about persons in all aspects of their humanity – physical, emotional, intellectual, social, economic and so on.

Personalisation is about persons, not people as functions within a society but also about their inner purposes as individuals. What then is a person? One way to engage children in this question is to ask, them in what ways they you similar to and different from a cabbage (or computer or other thing). What makes them different – the fact that they are active, emotional, rational and imaginative in ways cabbages and computers are not - is what makes them a person.

Persons are not only the functions they fulfil, the skills and standards they can achieve, but also the inner purposes of their lives. These purposes include self expression, a sense of self worth and self-knowledge. Creativity enables us to fulfil these purposes through engaging the capacity to express ourselves, for example through visual, verbal, symbolic or kinaesthetic means. Or as a child, aged 10, put it: ‘Being creative is when you make something special.’ Personalisation is about making all students special, recognising they are both at potential but also at risk, needing respect but also intensive care.

The value of personalised learning is that it not only enables pupils to exercise voice and choice, it also gives teachers their own voice and choice in planning teaching and researching professional practice. Personalising learning is a journey for both teachers and students and cannot be rushed. The general advice for developing learning is think big – start small. Research show how schools progressively developed their pathways to personalised learning over several years (Hargreaves 2006). There are not quick fix solutions.

## Questions

- What for me, or my school, are the most important aspects of personalisation?
- What do we do differently when learning becomes personalised?
- What could we do to support personalised learning of students?
- What could we do to support professional development of teachers?

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## 1. Dialogic Teaching

Research shows that the quality of classroom talk has the power to enable or inhibit cognition and learning. What stimulates thinking and learning are forms of instruction that can have come to be described as ‘dialogic teaching’. Dialogic teaching builds upon a long tradition of theoretical and empirical work on the role of talk in learning and teaching, stretching back to Socrates. Recently key figures in research into the role of dialogue have included psycholinguists (Halliday, Wells), socio-linguists (Barnes), classroom researchers (Mercer, Galton, Alexander), discourse analysts (Sinclair, Coulthard, Dillon), cognitive and cultural psychologists (Vygotsky, Bruner) and educational philosophers including Bakhtin in Russia and Matthew Lipman, creator of Philosophy for Children, in America.

The classroom research suggests the sometimes problematic state of talk in UK classrooms and the need for it to be handled in radically new ways if its potential to promote and accelerate children’s learning (Alexander 2004) is to be fully realised. Such research shows that schools and teachers often:

- view talk as a means of learning rather than an objective of learning
- fail to integrate talk effectively in developing literacy
- do not fully exploit the learning potential of talk for learning across the curriculum
- focus more on written than oral learning tasks and modes of assessment
- emphasise the social and affective functions of talk rather than the cognitive
- use forms of teaching and classroom organisation not conducive to sustained group dialogue
- rather use closed questions inviting recall, encouraging brief answers involving exchange of information rather than speculation and problem-solving
- limit 'thinking time' for pupil thinking (and do not model teacher thinking)
- use feedback to praise and support rather than diagnose and inform
- evidence many teacher questions from but few from pupils
- show little systematic building upon answers to construct extended lines of reasoning and enquiry
- fail to make students aware of the ground rules of effective dialogue

Dialogic teaching takes place alongside more familiar kinds of teaching talk such as rote, recitation, exposition and discussion. It is less a specific strategy than a range of strategies that make for cognitively-challenging interaction in the classroom. Dialogic teaching harnesses the power of talk to engage children, stimulate and extend their thinking, and advance their learning and understanding. Not all classroom talk secures these outcomes, and some may even discourage them. According to Alexander (2004) dialogic teaching rests on five key principles:

- collective: teachers and children address learning tasks together, whether as a group or as a class;
- reciprocal: teachers and children listen to each other, share ideas and consider alternative viewpoints;
- cumulative: teachers and children build on their own and each others' ideas and chain them into coherent lines of thinking and enquiry;
- supportive: children articulate their ideas freely, without fear of embarrassment over 'wrong' answers; and they help each other to reach common understandings;
- purposeful: teachers plan and steer classroom talk with specific educational goals in view.

Dialogic teaching requires particularly close attention to:

- the different contexts of talk – whole class, collective (teacher-led) group, collaborative (pupil-led) group, individual;
- the purpose of questions (e.g. elicitation, recall, instruction, management, routine, probing) and their structure (e.g. closed, open, directive, leading, narrow, discursive);
- the form of answers (e.g. factual, analytical, speculative, hypothesising, evaluative) and their length;
- the feedback which answers receive (e.g. evaluative, motivational, diagnostic, neutral);
- the way answers are built upon in order to take thinking forward;
- the length of exchanges;
- roles and procedures for pupil-pupil discussion;
- classroom climate and relationships;
- classroom organisation and layout;
- lesson planning and structure;
- the teacher subject knowledge needed for extended exchanges;
- ground rules governing the effective conduct of dialogic talk in classroom settings (attending, listening, speaking loudly and clearly, respecting alternative viewpoints etc).

Dialogic and other talk

Most teaching starts by drawing on a basic repertoire of three kinds of classroom talk:

- rote (teacher-class): the drilling of facts, ideas and routines through repetition.
- recitation (teacher-class or teacher-group): the accumulation of knowledge and understanding through questions designed to test or stimulate recall of what has been previously encountered, or to cue pupils to work out the answer from clues provided in the question.
- instruction / exposition (teacher-class, teacher-group or teacher-individual): telling the pupil what to do, and/or imparting information, and/or explaining facts, principles or procedures.

These provide the familiar and traditional bedrock of teaching by direct instruction. Less universally, some teachers, but by no means all, also use:

- discussion (teacher-class, teacher-group, pupil-pupil): the exchange of ideas with a view to sharing information and solving problems.
- scaffolded dialogue (teacher-class, teacher-group, teacher-pupil, or pupil-pupil): achieving common understanding through structured and cumulative questioning and discussion which guide and prompt, reduce choices, minimise risk and error, and expedite 'handover' of concepts and principles.

The two groups are not mutually exclusive, and the argument is not that rote, recitation and exposition should be abandoned. All five have their place. Dialogic talk, therefore, is part of the larger oral repertoire which is needed in order that schools may meet the diverse objectives of a broad curriculum, and so that children may be empowered both in their learning now and later as adult members of society.

But talk empowers socially as well as cognitively, and children themselves need to acquire the capacity to:

- narrate
- explain
- instruct
- ask different kinds of question
- receive, act and build upon answers
- analyse and solve problems
- speculate and imagine
- explore and evaluate ideas
- discuss, argue, reason and negotiate

and, in order that they can do this effectively with others:

- listen
- be receptive to alternative viewpoints
- think about what they hear
- give others time to think.

The quality of classroom talk depends on many factors: the speaking and listening skills of children and teachers, teachers' subject knowledge (for taking children's thinking forward requires a clear conceptual map of the directions which that thinking should take), classroom climate, classroom organisation, and so on. The indicators below are placed in two groups. The first group deals with the wider context within which dialogic teaching is placed. The second group lists some of the main properties of the talk which provides the core of dialogic teaching.

Dialogic teaching is indicated by:

Teacher-pupil interaction (for example in whole class and collective - teacher-led - group settings) in which:

- questions are structured so as to provoke thoughtful answers and answers provoke further questions and are seen as the building blocks of dialogue
- individual teacher-pupil and pupil-pupil exchanges are connected into coherent lines of enquiry
- there is a balance between the social and the cognitive purposes of talk, between encouraging participation and structuring understanding;
- pupils, not just teachers, are encouraged to ask questions and provide explanations
- those who are not speaking participate no less actively by listening, looking, reflecting and evaluating,
- the classroom is arranged so all can see and respond to each other
- all are encouraged speak clearly, audibly and expressively;
- children have the confidence to make mistakes, and understand that mistakes are viewed as something to learn from, not be ashamed of.

Pupil-pupil interaction (for example, in collaborative group settings) in which children listen carefully to each other; encourage each other to participate and share ideas; build on their own and each others'

contributions; strive to reach common understanding and agreed conclusions, yet respect minority viewpoints.

Teacher-pupil one-to-one monitoring which lasts for long enough to make a difference; is instructional rather than merely supervisory and provides diagnostic feedback on which children can build.

Questioning (whether in whole class, group or individual interactions) which: is anchored in the context and content of the lesson; builds on previous knowledge; elicits evidence of children's understanding; combines invitations for closed / narrow and open / discursive / speculative responses (what is?' and 'what might be?' questions); combines the routine and the probing; uses cued elicitations and leading questions sparingly rather than habitually; prompts and challenges thinking and reasoning; balances open-endedness with guidance and structure in order to reduce the possibility for error; and achieves consistency between its form and intent (e.g. where questions are questions rather than instructions, and open questions are genuinely open, rather than invitations to guess the one 'right' answer).

Responses to questioning which: address the question in the depth it invites rather than worry about spotting the 'correct' answer; move beyond yes/no or simple recall to extended answers involving reasoning, hypothesising and 'thinking aloud'; and are considered and discursive rather than brief and prematurely curtailed.

Feedback on responses which: replaces the monosyllabically positive, negative or non-committal judgement (e.g. repeating the respondent's answer) by focused and informative diagnostic feedback on which pupils can build; uses praise discriminatingly and appropriately, and filters out the routine use of 'wow', 'fantastic', 'good boy', 'good girl', 'very good', 'excellent' etc; keeps lines of enquiry open rather than closes them down; and encourages children to articulate their ideas openly and confidently, without fear of embarrassment or retribution if they are wrong.

Pupil talk through which children: narrate, explain, instruct, ask different kinds of question, receive, act and build upon answers, analyse and solve problems, speculate and imagine, explore and evaluate ideas, discuss, argue, reason and justify and negotiate.

Good talk does not always just happen – it needs to be planned. Good questioning promotes children's understanding and does not merely test their recall of information. Such questioning can improve comprehension in reading and writing as well as in talk. The quality of children's talk is greatly enhanced if children are given time to think. Discussion increases pupil's access to learning.

Talking before writing helps children to think, and then write, in sentences. Shifting the proportion of time in a writing lesson away from the writing itself and towards the talk actually benefits the writing.

Talk is a powerful tool for raising the confidence of children with special needs and those with low self-esteem. Children enjoy and are stimulated by well-structured oral lessons, and they readily adapt to the rather different ground rules which are necessary for such lesson to run smoothly.

Though the assumption that written work is the only 'real' work is deeply ingrained, children come to appreciate that talk is work too, especially if it requires the kind of self-discipline which is normally associated with written tasks.

## Questions

- What is the best way of organising the class for group discussion?
- What are the best conditions for whole class dialogue?
- How can we ensure that collaborative (pupil-led) group work is as disciplined and productive? What kinds of tasks are appropriate? What kinds of skills do participants need? How can they be developed?
- Dialogic teaching encourages us to reduce the dominance of 'Now who can tell me...?' questions followed by bidding, and to use more focused questions linked to the nomination of specific children. what is the right balance of bidding and nomination, and how is each of them best used?
- What kinds of questioning promotes children's understanding? What is the right balance of questioning and exposition? When should we question and when should we tell, inform or explain?
- What kind of feedback informs and extends as well as encourages.

- What are the differences between talk, discussion and dialogue?

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## 2. Developing Creativity

'All great acts of genius began with the same statement, let us not be constrained by our present reality.'

Leonardo da Vinci

'We need to be creative if we want a better future.' Chris, aged 10.

In recent years there has been an increasing emphasis on creativity by policy makers in education across the world. Creativity is seen as enhancing economic, cultural and personal development. But what is creativity?

### What is creativity?

'If I knew what creativity meant I would know if I am creative' Jane, aged 10.

Creativity is both personal and cultural. It relates to individuals at a personal level and to individuals as members of communities. Creativity is not simply, as some have suggested, the ability to produce work that is 'novel and appropriate' (Sternberg 1999). Creativity is essentially the capacity of individuals or groups to express themselves, through using their imagination to produce outcomes that are original and of value. This definition expresses five characteristics of creativity that are also paths to creativity in all aspects of life and learning:

- self expression
- using imagination
- producing outcomes
- original
- and of value

### 1. Self expression

Conventional views about good teaching usually list characteristics such as: sound planning, good subject knowledge, progressive development of skills, clear ideas about good standards, high expectations, direct instruction, discussion and assessment of work. But what does this list miss out? But such lists miss the heart of creative education - the personalisation of learning. Putting the learner at the heart of the process is the essence of effective education and of lifelong learning. What is a person? One way to engage children in this question is to ask, them in what ways they you similar to and different from a cabbage (or computer or other thing). What makes them different – the fact that they are active, emotional, rational and imaginative in ways cabbages and computers are not - is what makes them a person.

Persons are not only the functions they fulfil, the skills and standards they can achieve, but also the inner purposes of their lives. These purposes include self expression, a sense self worth and self-knowledge. Creativity enables us to fulfil these purposes through engaging the capacity to express ourselves, for example through visual, verbal, symbolic or kinaesthetic means. Or as a child, aged 10, put it: 'Being creative is when you make something special.'

Creativity is the expression of freedom of will. Every act of creativity is the triumph of freedom over necessity. As one teacher says to her children: 'You do not have to do it this way, you can do it your way. Surprise me.'

The two elements of personalised learning are voice and choice. When we give students a voice, by inviting their views and comments, we are personalising their learning. This is not free choice in the sense of 'anything goes', the challenge for them is to make an informed choice, one that fulfils a purpose, that can respond to the question that should inevitably follow: 'Why do you think that?' When we give them an open-ended choice in how to respond, we are offering not just a concrete exercise in democracy but a chance for informed self expression and a chance to exercise imagination. As Matthew, age 10 put it: 'Creative thinking helps me to make connections between things in my own way.'

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Encourage self expression by getting students to elaborate on what they know, or can do in a given situation, to make it more personal and more interesting:

Question cues:

- What might you add ... (eg to story, picture, design)
- What might you change ... (eg to make it different, more interesting)
- What is another way you could ... (eg explain something, pose or solve a problem, apply an algorithm, investigate a hypothesis)

## 2. Using imagination – creating new worlds

The first path to creativity is the use of imagination. Creativity begins with the process of imagining, supposing and generating ideas that you have not thought of before, which are original, providing an alternative to the expected, the conventional, or the routine. Imagination is the human power to convert absence into presence, changing what is not there into something that is now there in the mind, converting 'what is' into 'something-other', moving actuality into possibility. Its characteristic is 'possibility thinking' (Craft 2005).

The poet Baudelaire called imagination 'the queen of the faculties ... which decomposes all creation and creates new worlds' (quoted in Pope, 2005). The crisis of imagination in modern cultures, with its pervasive technologicised and mediated communications culture, is that we increasingly inhabit the imagination of others. We live in borrowed worlds, in a cyber-culture where the image reigns supreme. Much of the imaginative activity in modern culture comes pre-prepared and pre-packaged. Often we cannot be sure who are making the images for us, whether it is a creative human individual or some anonymous system of reproduction. Using imagination means applying our own personal imagination, our self-imagining of the actual world to make a personal possible world.

To be creative is to activate one's imagination. As Miercoles, aged 10 put it, 'Creativity is like imagination because when you create something you need to imagine it first.' What imagination does is to enable the mind to represent images and ideas of what is not actually present to the senses. It can refer to the capacity to predict, plan and foresee possible future consequences. In short imagination is the capacity to conceive possible (or impossible) worlds that lie beyond this time and place. These possible worlds may derive from actual worlds or be recreated from our store of memory knowledge. As William Blake said 'What is now proved was once imagined.'

Encourage students to think of new ideas, speculate on what might be possible and apply imagination to improve outcomes. Question cues include:

- What might happen if ... (if not)?
- Design a new way to ...
- Suggest an improvement on ...

## 3. Producing outcomes

Creativity is an active and deliberate focus of attention and skills to produce, shape and refine ideas or outcomes. It is about doing, which may include playing with no fixed purpose or the pursuit of a purposeful goal. Not everything that is worthwhile is predictable, not all worthwhile processes result in good products. We must not allow the desire to be perfect and to be right to prevent us from making an attempt. This is especially true of those gifted students and teachers who are 'perfectionists'. Success is rarely achieved in one attempt and is often not predictable. The important point is that success only comes through effort in thinking or doing. You must be doing even if the doing is thinking. We must urge our students to keep on doing but to try doing it differently. As the Buddha said: 'If you know but do not do, you do not know.'

An outcomes is a creative response. It need not be a physical or tangible product, it could be an idea, question, gesture, spoken story or image in the mind. As Ranjit, aged 10 put it: 'When you are creative its not just what you do or make, its what you think first.'

Encourage student s to generate many responses, encourage thinking of alternatives and greater fluency of ideas. Question cues include:

- How many kinds of ... can you think of?
- List all ... that could be used for ...?
- What might be the arguments for ... (and against ...)?

#### 4. Being original

Being original refers to the originality of an outcome which can be at different levels of achievement: individual originality in relation to a person's own previous work; relative originality in relation to a peer group; and historic originality in relation to works which are completely new and unique.

Encourage originality by encouraging students to experiment with alternatives, to change their initial ideas, see things another way, experiment with alternative approaches. Question cues include:

- How else might you ...?
- Think of five ways of/questions to ask about/reasons for ....
- List ten things you could do with ... (a shape, recipe, piece of music, picture, object, design brief, photo, news story etc.)

Encourage students to think of novel ideas, unique solutions, and design original plans. Starting points might include:

- Design a game for ...
- Invent a way to ...
- Think of a way to improve ... (an object, game, text, plan etc.)

#### 5. Judging value

Judging value refers to the evaluative mode of thought which is reciprocal to the generative mode of imaginative activity and invites critical, reflective review from individuals and peers. It is about judging how 'fitting' the process and outcomes were in aesthetic and functional terms (Boehm 1998). Teaching for creative thinking means engaging in critical thinking and dialogue, leading to assessments that can help inform better outcomes, processes and plans (Fisher 2005).

Encourage students to assess what they have thought and done, to evaluate the creative process and judge the outcome. Question cues include:

- What criteria should we use to judge whether ...?
- What is good/could be improved/is interesting about ....
- What could/should you/we do next ...?

Ways to review the progress of creativity in individuals, educational communities and organisations are further discussed below. There is a need to judge what has helped and also what has blocked creativity.

#### Blocks to creativity

Some deeply ingrained cultural habits may stifle creativity. These include:

- the 'I teach you listen' approach to teaching, for example, emphasizing that knowledge comes from transmission by authority figures while neglecting the active construction of ideas;
- emphasizing competitive performance while neglecting group cooperation and sharing of knowledge;
- emphasizing written tests, memorization, and recitation while neglecting diverse forms of performance;
- emphasizing standard answers while rejecting inquisitive and independent thinking;
- emphasizing hard work while neglecting the enjoyment of the work.

These ways of thinking do not allow for children to explore, make mistakes, or take risks by thinking outside of the box; instead, they may encourage them to scorn these forms of creative effort. In a survey of the attitudes of old people they were asked what, if they could live their lives over again, they would do differently. The most common response was – they would take more risks. In order to do this they would need the courage to fail. At any age we need to try to transcend limiting mindsets. Thomas Edison, the inventor, recognised that creative efforts often fail but that failures can be educative, or as he put it: 'Fail, but fail intelligently.' We need the vision but also the courage to be creative and to teach for creativity.

## Teaching for creativity

Teaching for creativity should not be confused with creative teaching. In creative teaching the focus is on what the teacher does. Teaching for creativity makes the focus the learner not the teacher. Active teaching methods are necessary but not sufficient for creative learning. Teaching for creativity helps students not only to learn, but to learn from their learning - to learn and practice the habits of creative behaviour. The best way to teach these habits is to model these behaviours ourselves. What you value and show to your students is what you will tend get from them. Here are some creative behaviours to encourage in the classroom:

Questioning and challenging	<ul style="list-style-type: none"> <li>• Asking why, how, what if?</li> <li>• Responding to ideas, questions, tasks or problems in an unusual way</li> <li>• Posing unusual questions or problems</li> <li>• Challenging conventions and assumptions</li> <li>• Thinking independently</li> </ul>
Making connections, seeing relationships	<ul style="list-style-type: none"> <li>• Applying previous knowledge or experience</li> <li>• Searching for trends and patterns</li> <li>• Using analogies and metaphor</li> <li>• Interpreting and applying learning in new contexts</li> <li>• Communicating ideas in novel ways</li> </ul>
Envisaging what might be	<ul style="list-style-type: none"> <li>• Imagining and seeing things in the mind's eye</li> <li>• Asking: 'What if?' 'What if not?'</li> <li>• Visualising alternatives</li> <li>• Seeing possibilities, problems and challenges</li> <li>• Looking at and thinking about things from different points of view</li> </ul>
Exploring ideas, keeping options open	<ul style="list-style-type: none"> <li>• Playing with ideas and experimenting</li> <li>• Responding to intuition and to feelings</li> <li>• Keeping an open mind, ready to adapt and modify ideas</li> <li>• Trying alternatives and fresh approaches</li> <li>• Overcoming difficulties, following through ideas</li> </ul>
Reflecting critically on ideas, actions and outcomes	<ul style="list-style-type: none"> <li>• Reviewing progress</li> <li>• Asking: 'Is this good?' 'Is this what's needed?'</li> <li>• Inviting and responding to feedback</li> <li>• Reflecting critically about the process and ways of doing things</li> <li>• Making constructive comments about creative outcomes</li> </ul>

For more on teaching for creativity see Robert Fisher's website [www.teachingthinking.net](http://www.teachingthinking.net)

The use of the world wide web, CD-Rom and other communications technologies in teaching for creativity is well-documented (Loveless 2002). However students need to move beyond the use of tools and techniques for their own sake in creating tangible outcomes, such as an image, a poem, a drama, a 3D construction or a movie. They need to be involved in an ongoing 'dialogue' about the representation of meaning and processes involved. By dialogue I mean the dynamic and creative cognitive processes involved when encoding and decoding meaning in visual texts and discussing these in a community of enquiry (Fisher 2003). This takes time and practice and cannot be achieved by projects based merely on individuals engaged in mechanical processes.

## Reviewing creativity

We can begin by reviewing what we currently do to ensure that we build a creative element in everything that we do. In reviewing the progress of creativity in individuals, educational communities or organisations the following questions might provide a basis for discussion and review:

- Do individuals have a commitment to promoting creativity? How is this expressed?

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- Has creativity been thought about and discussed?
  - Have the views of all involved been sought and discussed (including the students)?
  - To what extent do individual members of the group or organisation promote creativity?
  - Have examples of creative practice been discussed?
  - Have criteria been identified to enable the assessment of creative outcomes?
  - How is good practice in creativity shared with others?
  - What kinds of professional development might help promote creativity?
  - What opportunities are there for creative collaboration within the group?
  - Are work demands sufficiently flexible to allow time for creative projects to flourish?
  - How does the educational environment reflect and stimulate creative work?
  - Do all have access to creative resources and spaces, including the latest technologies?
- (adapted from Fisher & Williams 2004)

By teaching for creativity we can engage our students so that they develop the habits of creative behaviour which will help them live more fulfilled and enjoyable lives and so help create a future world that best matches their dreams. As Pat, aged 10 put it: ‘There are many possible futures but only one that we are going to live in so it better be good!’

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## 3. Teaching for thinking

‘We need to think better if we are going to become better people.’ Paul, aged 10,

There has been a growing interest in recent years in teaching for thinking (Fisher 2005). This interest has been fed by new knowledge about how the brain works and how people learn, and evidence that specific interventions can improve children’s thinking and intelligence. The particular ways in which people apply their minds to solving problems are called thinking skills. Many researchers suggest that thinking skills are essential to effective learning, though not all agree on the definition of this term. If thinking is how children make sense of learning then developing their thinking skills will help them get more out of learning and life.

### What are thinking skills?

Thinking skills are not mysterious entities existing somewhere in the mind. Nor are they like mental muscles that have a physical presence in the brain. What the term refers to is the human capacity to think in conscious ways to achieve certain purposes. Such processes include remembering, questioning, forming concepts, planning, reasoning, imagining, solving problems, making decisions and judgements, translating thoughts into words and so on. Thinking skills are ways in which humans exercise the sapiens part of being homo sapiens.

A skill is commonly defined as a practical ability in doing something or succeeding in a task. Usually we refer to skills in particular contexts, such as being ‘good at cooking’ but they can also refer to general areas of performance, such as having a logical mind, good memory, being creative and so on. A thinking skill is a practical ability to think in ways that are judged to be more or less effective or skilled. They are the habits of intelligent behaviour learned

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through practice, for example children can become better at giving reasons or asking questions the more they practice doing so.

If thinking skills are the mental capacities we use to investigate the world, to solve problems and make judgements then to identify every such skill would be to enumerate all the capacities of the human mind and the list would be endless. Many researchers have attempted to identify the key skills in human thinking, and the most famous of these is Bloom's Taxonomy (see Fig 1).

Bloom's taxonomy of thinking skills (what he called 'the cognitive goals of education') has been widely used by teachers in planning their teaching. He identifies a number of basic or 'lower order' cognitive skills - knowledge, comprehension and application, and a number of higher order skills – analysis, synthesis and evaluation. The following are the various categories identified by Bloom and processes involved in the various thinking levels.

You could plan or analyse many learning activities in terms of the above categories. For example when telling a story, a teacher might ask the following kinds of questions:

1	Knowledge	What happened in the story?
2	Comprehension	Why did it happen that way?
3	Application	What would you have done?
4	Analysis	Which part did you like best?
5	Synthesis	Can you think of a different ending?
6	Evaluation	What did you think of the story? Why?

Bloom's taxonomy built on earlier research by Piaget and Vygotsky that suggested that thinking skills and capacities are developed by cognitive challenge. Teachers need to challenge children to think more deeply and more widely and in more systematic and sustained ways. Or as Tom, aged 10 put it: 'A good teacher makes you think ... even when you don't want to.' One way in which you, as a good teacher, can do this is by asking questions that challenge children's thinking.

### What does research tell us about thinking?

Research in cognitive science and psychology is providing a clearer picture of the brain and the processes associated with thinking (Smith 2002). This brain research has some important implications for teachers. For example we now know that most of the growth in the human brain occurs in early childhood: by the age of six, the brain in most children is approximately 90% of its adult size. This implies that intervention, while the brain is still growing, may be more effective than waiting until the brain is fully developed. Cognitive challenge is important at all stages, but especially in the early years of education.

Psychologists and philosophers have helped to extend our understanding of the term 'thinking', including the importance of dispositions, such as attention and motivation, commonly associated with thinking (Claxton 2002). This has prompted a move away from a simple model of 'thinking skills' as isolated cognitive capacities to a view of thinking as inextricably connected to emotions and dispositions, including 'emotional intelligence', which is our ability to understand our own emotions and the emotions of others (Goleman 1995).

### Metacognition and self assessment

Improving the self assessment of pupils is a key aim of formative assessment. There is a growing realisation that we need to teach not only cognitive skills and strategies but also develop the higher 'metacognitive' functions involved in developing the self awareness necessary for self assessment. Metacognitive awareness involves making learners aware of themselves as thinkers and develop the self awareness needed for them to assess and improve their own learning.

Metacognition involves thinking about one's own thinking and learning. It involves developing knowledge of oneself, for example of what one knows, what one has learnt, what one can and cannot do and ways to improve one's learning or achievement. It also involves skills of recognising when one has a problem, articulating the problem, planning what to do in trying to solve problems, monitoring progress and evaluating the outcomes of one's own thinking or learning activity.

Metacognitive awareness is promoted by helping pupils to reflect on their thinking and decision-making processes. This metacognitive or self awareness is the key to self assessment. It is developed when pupils are helped to be strategic in planning, organising and reviewing their learning activities. They need to be encouraged to reflect before a learning activity by identifying the learning objectives or outcomes, to reflect during their learning activities and after, for example in a plenary review of their learning. The implication is that you need to plan time for debriefing and review in lessons to encourage children to think about their learning and how to improve it. This can be done through discussion in a plenary session, or by finding time for reflective writing in their own thinking or learning logs. ‘Self appraisal, when mediated, helps develop self awareness and self management – metacognitive thinking’ (Fisher 1998)

### Developing intelligence

The human mind is made up of many faculties or capacities that enable learning to take place. Our general capacity for understanding or intelligence was once thought to be innate and unmodifiable. As a child once put it: ‘Either you’ve got or you haven’t.’ The notion of inborn intelligence which dominated educational practice until the mid-20<sup>th</sup> century was challenged by Vygotsky, Piaget and others who developed a constructivist psychology based on a view of learners as active creators of their own knowledge. Some researchers argue that intelligence is not one generic capacity but is made up of multiple intelligences (Gardner 1993). Howard Gardner’s theory of multiple intelligence has had a growing influence in recent years on educational theory and practice, although not all are convinced of its claims. Whether intelligence is viewed as one general capacity or many, what researchers are agreed upon is that it is modifiable and can be developed.

Key principles that emerge from this research include the need for teachers and carers to provide:

- cognitive challenge, challenging children’s thinking from the earliest years
- collaborative learning, extending thinking through working with others
- metacognitive discussion, reviewing what they think and how they learn

McGuinness (1999) points out that the most successful interventions are associated with a ‘strong theoretical underpinning, well-designed and contextualised materials, explicit pedagogy, teacher support and programme evaluation’ (p13).

In England the revised National Curriculum (DfES 1999) included thinking skills in its rationale, stating that thinking skills are essential in ‘learning how to learn’. The list of thinking skills identified in the English National Curriculum is similar to many such lists: information processing, reasoning, enquiry, creative thinking and evaluation. Any good lesson or learning conversation will show evidence of some or all of these elements. They focus on ‘knowing how’ as well as ‘knowing what’, not only on curriculum content but on learning how to learn. The National Curriculum in England, as elsewhere, is no longer to be seen simply as subject knowledge but as being underpinned by the skills of lifelong learning. Good teaching is not just about the achieving particular curriculum objectives but also about developing general thinking skills and learning behaviours. Since the McGuinness review and the explicit inclusion of thinking skills in the National Curriculum, interest in the teaching of thinking has burgeoned in the UK. Research has shown that interventions work if they have a strong theoretical base and if teachers are enthusiastic and well trained in the use of a programme or strategy. Teachers are developing ‘teaching for thinking’ approaches in new directions, integrating them into everyday teaching to create ‘thinking classrooms, and developing whole school policies to create ‘thinking schools’.

### Making thinking explicit

Formative assessment offers rich opportunities for providing instruction in specific thinking skills and strategies while retaining an emphasis on subject area learning. Thinking skills and strategies can be made explicit by teaching 10-15 minute mini-lessons on skills during a lesson. If they do this in short episodes of ‘thinking time’ during a lesson (mini-plenaries) while pupils are engaged on projects the pupils can immediately apply what they have learned or been reminded of in meaningful contexts.

Effective ways of making thinking explicit include:

- selecting an appropriate thinking skill or strategy as a focus for the lesson
- describing the skill and/or inviting pupils to explain it

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- modeling and applying the skill through thinking-aloud
- guiding practice of the skill with a partner or small group
- explaining how and when to use the skill or strategy
- coaching on how to use the skill effectively

Thinking is also made explicit in metacognitive discussion as part of the plenary at the end of a lesson. Thinking is made explicit when the focus during the discussion moves from what pupils did to what they thought, the skills or strategies they used and what they learnt. What teachers are looking for in such discussion is evidence of the assessment of processes, knowledge and outcomes.

### Identifying thinking skills

‘What thinking skills are pupils developing and using in this lesson?’ is a question that can be asked of any learning activity. There are many models of thinking, such as Bloom’s Taxonomy. These models have many common features which include the three key processes of information processing, creative thinking and critical thinking.

Thinking can be described as a set of information processing capacities that we all possess. This information processing involves such things as finding or remembering relevant information, organising information, representing and communicating information. Information processing is necessary in order to define, compare, sequence and determine cause and effect. Information processing reminds us that thinking must be about something and that facts and knowledge are the important foundations for learning and understanding. But ‘what do you know?’ and ‘What can you find out?’ is just the beginning. We need to show pupils how to create new knowledge and to be critical about what they see, say, hear and do.

Creative thinking is about building on knowledge by generating new ideas and increasing the breadth of perception through imagining or hypothesising and designing innovative solutions. Creativity is seen as enhancing economic, cultural and personal development. Creativity is both personal and cultural. It relates to individuals at a personal level and to individuals as members of communities. Creativity is essentially the capacity of individuals or groups to think and express themselves through using their imagination to produce outcomes that are original and of value. See ‘Developing Creativity’ by Robert Fisher in the CPD pack.

Critical thinking reflects the human capacity to reason. It involves encouraging pupils to reflect on their own and different points of view, giving reasons, making inferences or deductions and arguing or explaining a point of view. The heart of critical thinking is reasoning that is not accepting from any pupil an answer or statement without asking for reasons or evidence. Critical thinking is a key skill in developing active citizens in a democracy, they also lie at the heart of helping children to be self directed and self-critical learners.

These skills are essential in teaching children to learn how to learn and to become self-directed researchers in new learning. These processes of research involve asking questions, planning their own research or study and engaging in an enquiry or process of finding out. They are also central to assessment or evaluation in helping pupils to developing their own evaluation criteria, to apply evaluation criteria in critical ways and in using judgements of the value of information and ideas to formulate creative ways forward and goals for future learning. More information and a proforma for identifying thinking skills in any learning activity is given in the CPD pack that accompanies this unit.

The following is a proforma for identifying, recording and assessing the thinking skills in any learning activity.

Thinking skills

What thinking skills are pupils developing and using in this lesson:

Identify examples of:

Information processing

Finding relevant information

Organising information

Representing or communicating information
Reasoning
Giving reasons Making inferences or deductions Arguing or explaining a point of view
Enquiry
Asking questions Planning research or study Engaging in enquiry or process of finding out
Creative thinking
Generating ideas Imagining or hypothesising Designing innovative solutions
Evaluation
Developing evaluation criteria Applying evaluation criteria Judging the value of information and ideas

How do we teaching thinking in the classroom?

Researchers have identified a number of teaching strategies to help stimulate children's thinking in the classroom. These approaches to teaching thinking can be summarised as:

### 1. Cognitive acceleration approaches

Philip Adey and Michael Shayer developed the original Cognitive Acceleration Through Science Education (CASE) project in the 1980s and early 1990s for Key Stage 3 Science. Their work now extends into other subjects and age groups and has perhaps the best research and most robust evidence of the impact of thinking skills in the UK. CASE lessons have also been developed for young children, called 'Let's Think!' which aims to raise achievement by developing Year 1 pupils' general thinking patterns and teachers' understanding of children's thinking. 'Thinking maths' lessons for primary children are part of a related project called CAME (Cognitive Acceleration of Mathematics Education).

These lessons involving discussion-based tasks in science and maths aim to develop children's conceptual thinking rather than the mechanics of doing the maths. They differ from open-ended investigations in that each lesson has a specific concept to develop. The activities are planned to generate group and whole class discussion rather than written work with an emphasis on how did you get your answer rather than what is the answer. As the CAME approach suggests if your emphasis in teaching is: 'How did you get your answer?' rather than 'Is your answer correct?' it is a far more productive way of generating children's thinking and learning.

### 2. 'Brain-based' approaches

#### Accelerated learning

Many educationalists are influenced by recent research into how the human brain works and draw on some of the implications of this research for teachers and schools. Accelerated Learning and Multiple Intelligence approaches all draw on these broad ideas together with research into learning styles. 'Accelerated learning' approaches include applying VAK - visual, auditory and kinaesthetic learning styles to teaching. VAK stands for:

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- visual – learning best through pictures, charts, diagrams, video, ICT etc.
- auditory – learning best through listening
- kinaesthetic – learning best through being physically engaged in a task

The common feature is the reliance on brain research to inspire teaching techniques in the classroom. Different researchers propose different sets of learning style characteristics, but many remain unconvinced by their claims children learn best through using one preferred style (Coffield 2004).

### De Bono

According to Edward de Bono we tend to think in restricted and predictable ways. To become better thinkers we need to learn new habits. His teaching strategy known as ‘thinking hats’ helps learners try different approaches to thinking. Each ‘thinking ‘hat’ represents a different way to think about a problem or issue. Children are encouraged to try on the different ‘hats’ or approaches to a problem to go beyond their usual thinking habits (de Bono 1999). The ‘hats’ or thinking approaches, together with questions you might ask, are as follows:

White hat	=	information	What do we know?
Red hat	=	feelings	What do we feel?
Purple hat	=	problems	What are the drawbacks?
Yellow hat	=	positives	What are the benefits?
Green hat	=	creativity	What ideas have we got?
Blue hat	=	control	What are our aims?

De Bono claims the technique is widely used in management but little research has been published on its use in education. Some teachers have found it a useful technique for encouraging children to look at a problem or topic from a variety of perspectives. It encourages us, and our children, to think creatively about any topic and to ask: ‘Is there another way of thinking about this?’

### 3. Philosophical approaches

A pioneer of the ‘critical thinking’ movement in America is the philosopher Matthew Lipman. Originally a university philosophy professor, Lipman was unhappy at what he saw as poor thinking in his students. They seemed to have been encouraged to learn facts and to accept authoritative opinions, but not to think for themselves. He became convinced that something was wrong with the way they had been taught in school when they were younger. He therefore founded the Institute for the Advancement of Philosophy for Children (IAPC) and developed with colleagues a programme is called Philosophy for Children, used in more than 40 countries around the world.

Lipman believes that children are natural philosophers because they view the world with curiosity and wonder (Lipman 2003). Children’s own questions form the starting-point for an enquiry or discussion, which can be termed ‘philosophical’. The IAPC has produced a number of novels, into every page of which, strange and anomalous points are woven. As a class reads a page, with the teacher, the text encourages them to raise queries. These questions form the basis of guided discussions. The novels provide a model of philosophical enquiry, in that they involve fictional children engaging in argument, debate, discussion and exploratory thinking. Many resources have been developed in recent years to adapt Matthew Lipman’s approach to Philosophy for Children to the needs of children and teachers in the UK, ‘Stories for thinking’ is one such approach (Fisher 1996). The aim, through using stories and other kinds of stimulus for philosophical discussion, is to create a community of enquiry in the classroom (see [www.sapere.org.uk](http://www.sapere.org.uk)).

In Philosophy for Children (P4C) dialogue takes place in a ‘community of enquiry’ (Lipman 2003). The ‘Stories for Thinking’ approach (Fisher 1996, 1997, 1999, 2000, 2001, in press) identifies the following format for a ‘community of enquiry’:

#### A ‘community of enquiry’ format

- Focusing exercise - sharing the learning objectives, reminding the agreed rules for discussion, and using a relaxation exercise or thinking game to ensure alert yet relaxed attention
- Sharing a stimulus - a story, poem, picture or other stimulus for creative thinking is presented
- Thinking time - children think of what is strange interesting or unusual about the stimulus and share their thoughts and questions with a partner

- Questioning - children ask their own (or shared) questions which are written on a board, these are discussed and one chosen (or voted for) by the children to start the enquiry
- Discussion - children are asked to respond, building on each others' ideas through dialogue, with the teacher probing for reasons, examples and alternative viewpoints
- Plenary review - the discussion is reviewed (eg using a graphic map), children reflect on the discussion and what they have learnt from it
- Further activities – children engage in follow-up activities to further explore the stimulus in creative ways in class or at home

The 'community of enquiry' is an effective strategy for finding questions that genuinely perplex and puzzle pupils. What is special about the community of enquiry is that the children themselves pose the agenda of questions for discussion. Finding the best research question for critical enquiry is a challenge to any gifted mind, as many PhD researchers have found. As one child put it – it gets your mind 'dancing' with possibilities.

#### 4. Teaching strategies across the curriculum

A growing number of programmes and strategies aim to help teachers develop children's thinking and learning across the curriculum, such as the TASC (Thinking Actively in a Social Context) and ACTS (Activating Children's Thinking Skills). It is difficult to evaluate the success of these and other interventions because of the many variables involved in the teaching situation. There is much scope here for your own research into teaching strategies in the classroom and for developing new strategies (Higgins et al 2001).

Many approaches include the use of thinking diagrams or 'graphic organisers' or 'concept maps' as an aid to making thinking visual and explicit. Other effective strategies to develop more reflective to teaching include:

- Thinking time allow five seconds or more thinking time, before and after a response.
- Think-pair-share allow individual thinking time, discussion with a partner, then group
- Ask for more ask follow-up questions to get students to 'unpack their thinking'
- Withhold judgement respond in a non-judgemental way eg 'Thank you',
- Ask for a summary promote active listening by asking for a summary
- Cue alternatives by asking eg 'Who agrees/ disagrees?' 'Who has another view?'
- Challenge the response ask 'Why?' or offer a different viewpoint
- Make a personal contribution offer more information, your own experience or ideas
- Invite their further contributions ask if anyone has a question to ask or idea to share
- No hands up nominate pupils to answer to encourage attention and all thinking

The aim of these strategies is to get more of the pupils more of the time to think for themselves and to seek out opportunities to gather evidence of learning. They are designed to create conditions where teachers and pupils can work together to explore misconceptions and to help teacher better understand what their pupils think and know. Such collaboration takes time but with patience and persistence it will help teachers gather evidence of learning and pupils to assess their own progress and learning.

Computers can also help develop children's thinking skills when used as part of a larger dialogue about thinking and learning (Wegerif 2002). The challenge for you as a teacher is to find ways to use the computer to encourage thinking with and discussion between children.

Recent test results show that standards in schools are rising – but slowly. Could the teaching of thinking provide a key to raising achievement? The experience of many teachers suggests that when pupils are taught the habits of effective thinking they grow in confidence, their learning is enriched and they are better prepared to face the challenges of the future. Children think so too – as Arran, aged 9, put it: 'When you get out in the real world you have to think for yourself, that's why we need to practise it in school.'

Good teaching is about helping children to think for themselves, which is why it is both a challenge and an adventure.

#### Questions

- What are thinking skills and are they important? Why?

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- What would a thinking classroom look like?
- What teaching strategies or approaches do you use to develop children's thinking skills?
- What evidence would show that teaching for thinking works?

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## 4. Assessment for Learning

The processes of formative assessment, that is, using assessment for learning, also describe the processes of teaching and professional development:

- identifying where you are,
- where you need to go,
- how best to get there.

Assessment for Learning can be described as a process of seeking evidence and interpreting evidence to help learners and their teachers to decide where the learners are in their learning, what they need to learn, and how best to learn. It is the process of identifying what the learner has or has not achieved in order to plan the next steps in teaching or learning. Feedback is provided to the learner on his/her learning and performance in such a way that either the teacher adjusts the teaching in order to help the student learn more effectively, or the learner changes his/her approach to the learning task, or both of these.

Assessment for learning is about feedback, but not any kind of feedback. Much of the feedback that teachers give to students, whether positive ('That's right: well done') or negative ('No, that's not quite right: you can do better than this.') does not meet the definition given above, for such feedback changes neither the way the teacher teaches nor the way the student learns. It does not just involve feedback, but it is only assessment for learning when the feedback given to the learner is used by the learner improve their learning. This is the difference between assessment of learning and assessment for learning. Assessment for learning runs counter to the way many teachers have seen their role and their routine practices in the classroom.

The Highland LEA approach to formative assessment is based on three key principles

- participation
- dialogue
- engagement

Assessment for learning involves the participation of students, transferring to the student much of what has conventionally been seen to be the professional property of the teacher, including:

- the learning objectives and learning outcomes of a lesson or activity;
- the standard of work expected;
- and the criteria by which the quality of the work is judged.

Learners too have to take responsibility, with help from the teacher, for where they are now in their learning; where they are going and how they might get there. This requires dialogue between student and teacher about what and how the student is learning. Conventionally, students perform and teachers assess performance. Assessment for learning is underpinned by a different set of principles and practices. It demands the engagement of students in monitoring their own performance. Through this engagement new qualities or skills are developed. The learner

- develops his/her own notion of quality, criteria or standards in learning
- monitors the quality of his/her own performance and is enabled to compare his/her actual performance with an internalised standard
- comes to see how the quality of the actual performance can be improved; that is, the learner engages in the action that closes the gap between the performance and the standard

Assessment for learning is not retrospective as is assessment of learning; rather is prospective, driving teacher and student forward. It is more about feedforward than feedback. Unlike assessment of learning, it is not an occasional teacher activity that comes at the end of a piece of student learning, but rather a joint activity between student and teacher. The teacher gives the student greater responsibility for learning by simultaneously transferring the knowledge and skills by which such responsibility can be exercised. Teachers who become experienced in assessment for learning help their students to learn more effectively. This can be demonstrated in terms of conventional outcomes, such as improved examination results. But also students improve their metacognitive skills, including learning how to learn (Black et al 2003).

Assessment for learning can be a powerful way in which students get better test results without sacrificing their learning orientation to a narrow performance orientation, not just 'How well did I do?' but 'How well am I learning?' Through assessment for learning both teachers and students are led to think afresh about the purposes of assessment and marking. They understand better why they are doing what, and how this helps students to learn better. There is a clear link with student voice (see below) in that students are being helped to articulate their learning needs and difficulties to themselves, to their peers and to staff. In schools where assessment for learning is embedded, student voice finds its rightful place, as being at heart about teaching and learning and then secondarily in a wider context about the school environment, school life and school governance.

### Assessment for Learning strategies

Assessment in classrooms is often through question-and-answer sessions. The structure of such sessions is often:

- teacher asks (closed) question
- student (designated or selected volunteer) replies
- teacher evaluates the reply

or, when this ideal pattern fails,

- teacher asks (closed) question
- no student replies or the reply is incorrect
- teacher asks a different student or rephrases the question.

In traditional question and answer sessions there is some feedback from the teacher to the students' responses, but it is usually simple evaluation, a kind of immediate summative assessment. It is not assessment for learning, which demands that there be some forward impact on the next steps in teaching or learning. Most question and answer sessions are oral checks on what students already know. The right answers to the questions are predetermined in the teacher's head: the task of the student is to articulate, even guess, the answer the teacher is seeking. Oral tests can have some value, such as maintaining student attention, but we should not pretend that they do much in the way of advancing learning.

When questions are open, they are more difficult to answer, thus requiring more thinking time by the learner, so the teacher has to learn to tolerate the inevitable pause for thinking time or to sustain thinking through a response which invites students to think more widely and deeply, for example: 'This is a difficult question. Take your time. Everybody think carefully about it.'

Teachers can turn the traditional question and answer session into a more participative discussion by adopting tactics such as:

- Force thinking time.  
Force thinking time by saying: 'Here is a question to think about for (eg half a minute)....' Add challenge to quick thinkers, if necessary, by saying, for example: 'I am looking for many possible answers/ the best answer I can get'
- Use 'think, pair, share'  
Invite individual thinking time, then time to discuss thinking with a partner before sharing thinking with the class or group. Students who find a question difficult can be encouraged to 'phone a friend' ie ask their partner, or to share ideas with a larger group.
- Bounce the question back to all the students.  
The teacher turns to the class and asks 'Do you agree?' or 'What do you think of X's answer?' (and not only when X's answer is wrong!). This forces students to evaluate the response of others, decide whether they agree or disagree and think why.
- Set a problem based on the assumptions of the answer  
Sustain thinking by asking: 'If this is true, then how would you...?' This invites a deeper and more sustained discussion which can expose student (mis)understandings and allows students to develop and expand on the contributions of fellow students.
- Get students to questions one another, and to evaluate the answers.  
Put learners into a teaching role, through which they have to think what constitutes a good question and a good answer. Use 'think, pair, share' to develop a range of questions and answers. Ask students to evaluate the questions and answers.
- Set the class a problem to share  
The problem can then take the form of an open, higher-order question demanding a longer and more complex answer than is possible in a quick oral test of memory. Seek elaboration of the answers offered by students.

### Marking work

When work is returned to students their first reaction is to look at the mark then to compare it with the grade given to other students. The comments made by teachers that are intended to be formative feedback are often given scant attention. Assessment for learning can be sabotaged by a student obsession with summative marks or grades. True assessment for learning requires the teacher to offer feedback with comments only. Engagement with learning happens when student reflect on the comments given. This reflection is enhanced when students are required to make a response to the teacher's comments, for example after the comment on the student's work or in their jotters or learning logs; and also when opportunities are given to dialogue with the teacher about the comments and the student feedback. The aim is to think about how they might close the gap between their desired standard and their current performance. Removing the marks or grades is effective only when the assessment criteria are explicit and clearly understood by students. Learning happens when the student both knows what to do and is given some metacognitive control over thinking and learning through dialogue and engagement not only with teachers, but also through self and peer assessment.

### Student self-assessment

Peer and self assessment also help pupils become more engaged in and take more responsibility for their own learning. If pupils are routinely expected to share their work with a critical friend or learning partner before showing it to the teacher or others the practice of self assessment will become embedded in classroom practice. Such practice will also develop not only the skills but also the disposition for pupils to be willing to assess their own progress in learning. These ways of making thinking explicit relate closely to and exemplify the ACfE model of thinking dispositions and capacities

Formative assessment should help pupils internalise the principles and processes of assessment. We need to help them make their thinking explicit to aid this process of internalisation. Self-assessment skills are best acquired through prior experience of peer assessment. Once students have understood the goals of an activity, they can then judge the extent to which fellow students have actually reached these goals. This requires students to develop the language and concepts of learning with which to reflect on and talk about the

quality of work and learning of others, and their own work and learning. Peer assessment is an exercise in student voice, responding to the following questions;

- ‘What do you think of what others have done?’
- ‘What do you think of what you have done?’
- ‘What do you think needs to be done next?’

The criteria for judging the quality of work have to become explicit before they can be reflected on or discussed. For most students, this is a challenging change in their role for which they need to have:

- access to the given criteria by which a desired performance can be judged
- opportunities to discuss and evaluate the criteria
- examples of work to question and discuss in relation to the criteria

Students should be looking at the work of another student in terms not just of the mark to be awarded but also what advice would help the other student improve their work or process of learning. Through peer assessment they develop the tools of self assessment. One way to ensure some peer and self assessment is to say that no work will be marked until peer or self assessment has been undertaken. As part of their self-assessment students can ‘traffic light’ their work, with a green icon for areas they think they fully understand, orange for areas they partially understand and red to indicate a tenuous grasp. It is when students are fully engaged in their own learning and are confident enough to expose rather than hide their weaknesses that teachers can use assessment for learning to personalise future learning.

Assessment for learning means changing the way one thinks about teaching, about the role of teacher, and about what constitutes good teaching and a successful lesson. As with developing student voice, assessment for learning cannot be introduced by every teacher into every classroom all at once. The principles of assessment for learning need to be shared between teachers, students and staff and commitment by staff to develop new ‘teaching for learning’ practices, and time and support given to learn the new skills and to assess the effectiveness of new practices.

## Questions

- What for you are the principles of formative assessment (AiFL)?
- How well is AiFL embedded in the routines of classroom life?
- In what ways are you monitoring the impact of assessment for learning on (i) student learning, its character and quality, and on (ii) student performance in tests and examinations?
- How is assessment for learning affecting student and teacher roles? What do they feel about it?
- Have you informed and involved parents in assessment for learning developments? Will they be satisfied that they are getting proper reports on the achievement and progress of their children?
- What is the role of students in participation, dialogue and engagement in assessment for learning?
- What do we need to do to develop AiFL and ‘teaching for learning’ further in our school?

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## 5. Student voice

Student voice is about personalising for pupil engagement with learning. Student voice is not about giving the power for the day-to-day running of the school to students. It is a means of involving pupils in the school community and in the processes of teaching and learning. Schools that have successfully engaged student voice find that their students are more motivated to learn and to see school as an institution more relevant to their lives. Student voice is a powerful way into personalised learning.

### What is student voice?

Evidence of consulting students and engaging student voice includes:

- Student councils
- Peer assessment
- Peer mentoring

- Student trainers
- Student researchers
- Peer counseling
- Student websites
- Student interviewers
- Student focus/action groups
- Student parliament
- Student governors
- Curriculum advice

Many schools have developed student voice in areas other than a student council – for example, some have trained peer mentors and counselors. In schools where student voice is most developed, the culture and ethos have been adapted to nurture and support the development and expansion of student voice activities.

In these schools, we might expect to see:

- Student researchers (researching issues such as what makes a good lesson)
- Students interviewing prospective members of staff
- Student discussing school policy and practices
- Students evaluating lessons as part of the school's strategy to improve teaching and learning.

Some of these ideas are challenging and all require careful planning and implementation. All have the potential to engage students and involve them at the heart of the learning community that is a personalised school.

Student voice flourishes in a particular kind of school culture and helps to replenish such a culture – reflecting and sustaining the school as a community of learners. The idea of community most neatly captures what student voice is about. It is not simply about introducing new structures, such as student councils, or about providing other occasional opportunities for students to speak their mind or have their say. It is about creating a genuine community of enquiry and learning. It is also about forming more open and trustful relationships between staff and students. This works when the same principles and practices apply to dialogic relationships between students, between staff and students, among the staff, and between school leaders and their professional colleagues. It is underpinned by principles of participation and dialogue leading to better engagement in learning.

Such relationships presuppose a willingness to listen, and to develop the skill of doing so attentively. This recognises that many meanings and intentions are implicit and subtle rather than obvious and explicit. It means making such thinking explicit. The risk that students will say things that are unwelcome or challenging makes student voice more difficult for teachers than for students. Students may fear that staff do not really want to listen, but will only hear what they want to hear. Student voice may threaten teachers sense of their authority and control

Student voice aims to create a partnership between staff and student that results in teaching and learning being a shared responsibility. Part of the key is trust. Teachers have always expected students to trust them and are disappointed when they do not. But the fact is that teachers do not always trust students, especially the disaffected and disengaged; and even when they do, they may behave in ways that signal to students that they are in a low trust environment. Trust breeds trust, and leads to the climate out of which mutual respect arises. It takes time for students to feel confident that they can be constructively critical of lessons and aspects of schooling without causing offence. They need to be trained in the skills of dialogue - help in what to say, and how to say it. There is a risk that when not all students are involved in the dialogue that student voice becomes restricted to a minority of teachers who feel comfortable with student voice activities and a minority of articulate students who feel equally at home. The aim is to develop a learning community of mutual respect among all its members.

John MacBeath (2003) suggests that there are in a school so many voices (some of which may not be verbal) that there are harmonies and discords - strident shrieks, soft whispers, and silences, both natural and enforced. Replacing this cacophony with the right balance is the task of leadership. Part of student voice is

getting students to listen to one another and to respect different views. For this reason, in some schools student voice provides the basis for learning about, and in, dialogue, democracy and citizenship. Of particular importance in personalising learning is the voice of the individual student, by which every individual is able, with confidence, to express himself/herself to others, and particularly to staff. Many of the developments and activities of student voice are directed at the whole student body such as school councils, rather than at the individuals. These collective expressions of student voice do bear on the potential of individual student voice for personalising learning, for even if the individual has no direct involvement in such activities, their existence shapes the general culture and climate so that students feel they are valued and trusted, and can express themselves in open ways. Such activities can improve relationships between students and between students and teachers.

What can individual student voices express? Points of view, opinions, ideas, suggestions, worries and concerns are obvious examples, some of which will relate directly to learning and to teaching including matters of learning curriculum content or learning style.

Personalising learning will often demand a private conversation between teacher and student. Teachers may find such conversations as one-sided, so that what was intended as an exchange or dialogue becomes something of a lecture. Dialogue, with openness on both sides is much more likely to arise when the students are used to dialogic teaching and of a school culture where students are valued and their voice is known to be valued and listened to.

On some issues, small group conversations can be powerful sources of student voice. The lone interview with a teacher can be intimidating to some students. The small circle protects and supports the reticent individual, who can nod agreement to what he or she would not have dared say, or who might build on a line that another student has started to explore. A group conversation does not look targeted at the individual, though all who participate may be affected by decisions or outcomes. Student voice is often best facilitated in a group community of enquiry.

The most sensitive area tends to be student voice on teaching, that is students assessing how the teacher teaches, organises the lesson or treats the individual student. Inviting students to give more direct and open feedback, in the form of their evaluations or suggestions, requires courage, for some of teachers the messages may be unwelcome. The object, however, is to create a partnership between the teacher and the class, or the teacher and the student, so that teaching-and-learning are co-constructed to make the experience more rewarding and more effective for both. It is here where student voice and assessment for learning most closely overlap. When student voice works, there are gains all round.

## 1. School councils and school governance

School councils are common in secondary schools. Much more rare are effective school councils that provide collective student voice to create a culture of trust and mutual respect. This is what underpins a learning community, in which learning and teaching are a constant focus for reflection and improvement. Of course, such councils do not have personalising learning as their main aim: it would never be more than one aim or byproduct of a council. Unquestionably a successful school council reflects and sustains a climate in which student voice in many varieties will prosper. The issues under discussion need to be relevant and varied, and not limited to short-term or relatively trivial matters. Unless explicit and regular links between the whole student body and the council's agenda and achievements are forged, members of such councils will be a small minority of students, and their actions will seem irrelevant to most students. Staff, and particularly the head teacher, must be seen to support the council and its work.

## 2. Students as researchers

The idea of students as researchers, say Fielding and Bragg (2003), 'promotes partnerships in which students work alongside teachers to mobilise their knowledge of school and become 'change agents' of its culture and norms. It seeks to develop among students and teachers a shared sense of responsibility for the quality and conditions of teaching and learning, both within particular classrooms and more generally within the school as a learning community.' It makes three assumptions: that students and teachers may have different views on what is significant or important in learning, or might mean different things by them; that such differences

can be a source of creative improvement rather than destructive conflict; and that creating conditions for dialogue is a way of improving the school culture.

Students first agree with their teachers a topic that matters to them – a question, a problem, an idea - for further investigation. If there is a focus on learning, rather than school policy or environment, it might be a relatively safe topic, such as:

- what learning preferences/styles do students have?
- what gender differences are there in learning?
- what is needed to make the school council work better?
- what helps or hinders learning?
- what makes a good lesson?
- what qualities are needed in a teacher or year tutor?

Michael Fielding (2003) believes student voice moves both teachers and students beyond the dominant orientation to instrumental learning towards a richer conception of wider human flourishing. He suggests a progressive scale of activities for students-as-researchers as both students and teachers gain more confidence and recognise the benefits. These are:

- students as sources of useful data for staff, but playing no active role
- students as active respondents, discussing the data openly with staff
- students as co-researchers with teachers on agreed issues
- students as independent researchers: research is initiated, conducted and reported by students.

### 3. Student voice activities

The following are examples of student voice activities:

- a survey of year 8 students explores what they think helps and hinders learning
- a focus group of students discusses learning styles
- some students are invited to observe lessons and offer feedback to teachers
- the student council discusses the state of student toilets
- a student has a one-to-one discussion about learning with a teacher
- a group of student researchers investigates what makes a good lesson and reports back to staff and the student council
- students are invited to join the committee to appoint new learning support assistants
- every student is provided with an individual learning plan
- one student from every year becomes an associate governor
- students visit another school to investigate good practice and report back to students and staff
- students design and organise a parents' evening

### Questions

- What are the most important principles underpinning student voice in schools?
- In what ways has your school developed the student voice?
- How are students helped to develop the skills of dialogue?
- Which activities invite student voice? Why are these being chosen? Are staff and students agreed on them?
- Could and should students play a much bigger role in your school? Should you involve students in staff appointments? If so, how?

A project on student voice to help students to articulate their needs and wants ('What helps you to learn? What stops you learning?') leads staff to recognise that they could use learning support assistants in a more student-centred way and that increasing technical support could lead to more effective use of ICT, both at school and in the home. The development of assessment for learning has proved to be an effective way of enhancing students' capacity for learning to learn; the changed style of questioning has given students greater confidence to engage with staff when they do not understand the content or purpose of lessons. What role do students play in your school review?

### References

John MacBeath, Helen Demetrious, Jean Rudduck & Kate Myers

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(2003) Consulting pupils: a toolkit for teachers, Pearson Publishing.  
 Michael Fielding & Sara Bragg (2003) Students as researchers: making a difference, Pearson Publishing.  
[www.mantleoftheexpert.com/](http://www.mantleoftheexpert.com/)

## 7. School review

School review is needed to plan, monitor and assess the development and impact of personalised learning, including personalisation of the curriculum and the use of new technologies. The aims of a school review of personalised learning include:

- assessing where we are
- identifying ways forward
- sharing good practice

The following are some aspects of school review that relate to personalisation:

### Assessment for learning

Do we:

- know strengths/weaknesses of every child
- use of evidence/data
- use dialogue to identify pupil needs
- structure feedback linked to learning targets
- show clear links between AfL and lesson planning

### Effective teaching and learning strategies

Do we:

- use the full range of dialogic teaching strategies
- teach lessons in how to learn, engage in dialogue and in independent learning
- develop use of ICT strategies in school and beyond
- use learning partners, mentors, groups and other learning resources
- make cross-curricular links in contexts for learning

### Curriculum entitlement and choice

Do we:

- consult pupils re. teaching and learning
- offer pupil choice in learning, and training in learning to learn
- developing individual support eg catch-up, extension
- create a flexible curriculum, and flexible use of curriculum time
- effectively extend learning beyond school

### School organisation

Do we:

- think creatively about school organisation
- benefit from workforce remodelling
- maximise planning, preparation and assessment time
- develop our behaviour for learning policy
- support for pupils learning outside school hours

### Partnerships beyond the school

Do we:

- encourage parent/carer involvement and communication
- develop links to local institutions
- make best use of support services
- develop a full range of creative networks and partnerships
- extend the impact of our school on the community

What kinds of school are needed for the 21<sup>st</sup> century?

C19 education model

- school is designed and organised on the basis of the factory model
- roles are sharply defined and segregated: teachers are clearly teachers (in their academic gowns) and students are dressed as, and behave like, students
- education is producer-led: teachers know best and have power to decide

C21 education model?

- school is designed and organised to provide personalised education for all students
- roles are blurred and overlapping: teachers learn as well as teach, students mentor other students as well as learn for themselves, and new professional roles complement that of the teacher
- education is user-led (but at point students rather than their parents are the users?)

Source; Hargreaves 2004

## Curriculum design

What kind of curriculum do pupils need for the 21<sup>st</sup> Century? What curriculum content do they need to know? What learning and life skills do they need to develop? What choice should be offered to students to determine their own learning? There are curriculum content issues of determining the broad character of personalised learning for 21st Century schooling. This requires showing what it is that schools and their staffs do differently when learning becomes more personalised. For example growing numbers of schools are adopting a more cross-curricular approach to learning (for example see [www.internationalprimarycurriculum.com/](http://www.internationalprimarycurriculum.com/))

The changing character of the workforce and the new technologies are powerful drivers of change in school design and organisation. Refurbishing and rebuilding schools offer opportunities for rethinking school organisation in order to affect school design. Traditional schools were designed for students in age cohorts (year groups) taught largely in subgroups (classes) in appropriate spaces (classrooms). Personalising learning may demand new forms of organisation.

A commitment to increasing curriculum choice in school provision leads to rethinking the organisation of the secondary school day and week to allow for mixed-age groups and immersion days on a single theme or subject, as well as to make some new uses of ICT to complement teaching and tutorial sessions and to allow sixth formers to spend more time working from home. New technologies can be a powerful aid to better teaching and learning. They also give students more control over their learning and greater access to the resources and content that might meet individual learning needs. And they give students greater independence, since the technologies can be used in many different ways, places and times beyond school and so offer new flexibilities in the way learning can be personalised.

## School Buildings

What might schools look like in 2020? What kind of a building? Will there be class rooms? What kind of equipment will they contain? Will all teachers work from a school building? Will all students come to school every day? Will there be a timetable?

These are just a few of the questions educationalists are beginning to ask in their research for building 'Schools of the Future'.

Another area for review is workforce development. This may involve change to the structure and function of the educational workforce, out in the community as well as in the school and classroom. It seems likely that as the medical profession developed a considerable expansion of paramedical roles during the 20th century, the teaching profession will follow a similar line of development beyond the teaching assistants of today. This enlargement of a more differentiated teaching force is crucial to personalisation. New roles also change the relationships between learners and those who support their learning. We can no longer speak simply in terms of teacher and taught. Many adults in the school undertake various forms of mentoring and coaching (For more on mentoring see the CUREE website: [www.curee-paccts.com/dynamic/curee48.jsp](http://www.curee-paccts.com/dynamic/curee48.jsp))

Mentors outside the school are becoming of increasing importance, too. This is particularly so for those with needs that are hard to meet in the school – the exceptionally able, the disengaged and other potentially underachieving groups for example: external mentors can be vital in personalising their learning. Equally

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important is the growth of students mentoring students. The whole area of what used to be called peer tutoring is at last achieving wider recognition through its potential for personalising learning.

## Questions

Here are some questions to help you reflect on how you can personalise learning in your own school for the future.

What might your school look like if:

- Multi-disciplinary teams of professionals were available to support pupils' learning
- Pupils weren't grouped in uniformly sized, single age group classes?
- Pupils weren't expected to move from one regular-sized, rectangular room to another almost identical one?
- Study places were designed and furnished for collaborative as well as individual work?
- Older pupils were not always required to be physically present in order to be attending?
- ICT infrastructure and portable devices were ubiquitous?

And some opportunities when thinking about personalising spaces and places around your school:

- Challenge givens – have we always had break at 10.30?
- Challenge current ways: keep if great, start if needed, protect where valuable, cease where inappropriate.
- Learning styles - what does this mean for different people?
- Different times – is Maths always in the morning?
- Different uses for spaces and places?
- Are we actively managing change or letting change manage us?
- In your school, which pathways are most developed, relatively underdeveloped and candidates for further development and innovation?
- Is the leadership for each pathway clearly established?
- What new forms of school organisation might help develop personalised learning?

## Questions

- In your school, which pathways are most developed, relatively underdeveloped and candidates for further development and innovation?
- Is the leadership for each pathway clearly established?
- What new forms of school organisation might help develop personalised learning?
- What could we do to support school review of personalisation?

## Further reading

David Hargreaves (2004) *Personalising learning: next steps in working laterally*, Specialist Schools Trust.  
 Andrew Pollard & Mary James (eds) (2004) *Personalised learning: a commentary from the teaching and learning research programme*, Economic and Social Research Council.

### 7. Personalised research: researching personalised teaching and learning

Personalised research is a form of personalised learning. It is about you setting the agenda for research and your own learning. It begins with the question, 'How do I improve my work?' Its underlying premise is that professionals should be actively engaged in setting their own goals for improvement, devising their own research plans and choosing from different ways of research the methods best-suited to their needs. It enables you to express your voice and your choice.

Personalised research involves a practical way of looking at your own work to investigate what you are doing and identify ways to improve it. The purpose of personalised research is to improve some aspect of practice, the understanding of practice and the situation in which practice takes place. It is often referred to as 'action' or 'practitioner based' research since it involves you investigating and reflecting on your own practice. It enables you at first hand to find out about the social world you are in, through focusing on what individuals think, say and do in order to improve what they might think, say and do. Improvement and involvement are central to all forms of action research.

Lewin (1946) first coined the term ‘action research’ to refer to a way of learning about an organisation through trying to change it. A major influence on its development in the UK was Lawrence Stenhouse who promoted the idea of ‘teacher as researcher’. He argued that just as students should be encouraged to take responsibility for their own learning so teachers should take responsibility for researching their own practice. ‘Research’ he said ‘refers to any systematic, critical and self-critical enquiry which aims to contribute to the advancement of knowledge’ (Stenhouse 1975)

Personalised research only works if practitioners are engaged in continual self-critical assessment of their ideas, strategies and goals. The idea of self-reflection is central to this kind of research. Traditional forms of research involve outside researchers coming in to do research on other people. In action research, researchers do research on themselves. Empirical researchers enquire into other people’s lives. Those engaged in personalised action research enquire into their own personal and professional lives. Personalised research is therefore an enquiry conducted by the self into the self and what it does. This involves you, the practitioner, thinking about your own life and work. It is not simply ‘action’ research in the sense of finding things out by reporting events and collecting data. It involves you thinking about what you do, asking yourself why you do the things that you do, and investigating whether you could do them better.

Personalised research is about extending your professional knowledge by:

- researching and examining your own professional thinking and practice
- sharing your research and learning with others
- evaluating and improving the quality of what you think and do

Personalised research is open ended. It does not begin with a fixed hypothesis. It begins with an idea that you develop. Empirical research investigates what is, action research focuses on what might be, not on a fixed but on an evolving situation and personalised research focuses on what might be for me as a developing professional. It is a developmental process of investigating an idea, seeing how it develops and continually checking to see whether it is in line with what you intend. It is a form of self evaluation, widely used in professional contexts as part of appraisal, mentoring and self assessment.

The guiding principle of personalised research is the focus on issues of personal and professional development, not on an agenda controlled by others. It encourages research based on personal values. Personalised research is a strategy to help you live and undertake some professional practice in a way that you feel is a better way. It helps you live and work in ways you believe in, and it enables you to give good reasons for doing so.

Action research is prominent not only in professional teacher education but also in management and business education, social and health care work and other professional contexts. By reporting the outcomes of your research you make available to others the benefits of your own personal insights and discoveries, thereby making a contribution to the global community of professional learning.

Traditionally research involves identifying a problematic issue, imagining a possible solution, trying it out, evaluating it (did it work?), and changing practice in the light of the evaluation. This is what many people do in numerous life situations.

The process described so far is a basic problem solving process. To turn it into personalised research you would need to say why you wanted to investigate the issue and chose particular methods to gather data. You would then turn the data into evidence in terms of what aspect of your personal professional life you wished to improve. You would express your conclusions not as abstract generalisations, but as practical recommendations that reflect your personal values and goals.

Most of us do a kind of personalised action research in many aspects of our lives, though we probably don’t call what we do research. Informal personal research is undertaken in many workplace contexts as part of on-the-job professional learning. When we apply a disciplined and systematic structure to our everyday learning, and make it clear to other people how we know what we are doing, we can say that we are doing action research. When we apply this research to the development of own professional development and self-awareness we are engaged in personalised research.

Enlightened forms of professional development work on the assumption that professionals already have a good deal of professional knowledge, and are highly capable of learning for themselves. What they need in their professional learning is appropriate support to help them reflect on what they know and generate new knowledge. New knowledge is most effectively generated through dialogue with others who are equally interested in the process of learning. The best dialogue creates a community of enquiry where all voices are valued and all can contribute to shared understandings. No one voice dominates in a community of enquiry, we all share and value one another's viewpoints, whilst engaged in critical discussion.

Many professional organisations encourage practitioners to undertake action research as part of their professional learning, and this can contribute to a qualification or accreditation. Ways to use your research to gain accreditation are discussed at the end and suggestions given for further reading.

The question 'How do I improve my work?' has a social implication. One person improves their work not only for their own benefit but also for the benefit of others. If you can improve your understanding of what you are doing, and some way of improving what you are doing there is a good chance you will influence others in the situation you are working in. You will need them to help you to fully evaluate the effects of what you have been thinking and doing. Most ideas that people have are improved by the contributions of others or of someone else, a critical friend. This is the way that knowledge evolves, a process of learning for yourself and from others and developing new ideas and ways of working.

This awareness of the need not only for self evaluation but also the need to be open to the evaluation of others shows your willingness to accept responsibility for your own thinking and action. Accountability is part of good professional practice, including research. In doing personalised research you are giving an account of yourself. You need to justify what you are doing with good reasons and a sound basis of evidence. Personalised research helps you to formalise your learning, to give a clear and justified account of your work, to help improve your own practice and the thinking and practice of others.

Personalised research is not simply about incremental learning. One criticism action research is that it is simply involves practitioners in evaluating and modifying their actions as they think fit. Personalised research is about more than this, it is about changing one's ways of thinking about what one does in ways that are evidence-based and personally relevant. Unless there is some development of personal theory or ideas then action research is simply about trying to do things differently. That is why 'action' research is inadequate to describe the full intent of personalised research.

Personalisation involves both mind and action, ideas and practice, values and feelings, individual perception and shared understanding. Practice needs to be grounded in personal theory and personalised research should seek to develop both theory and practice. Simply building on previous learning is not enough – that is the job of professional development. Personalised research is about not only developing and transforming past practice in new contexts, but also about developing the thinking that underpins practice. It is formative assessment about what we do (personal action) and think (personal theory).

Another criticism of action research is that it lacks a historical dimension. We should not approach research as it were a blank slate. Our world should not be limited to our own personal perceptions. It is not about simply exploring the private world of our thoughts and experiences. We are inheritors of a long tradition of shared enquiry. We enhance ourselves not only through our own thinking and action, but by benefiting from the thinking and action of others. That is why good research studies include some form of literature review, that is a recognition of how knowledge in professional contexts has been expanded through the work of earlier thinkers, writers and researchers. As Newton put it; 'We are standing on the shoulders of giants'. We are more likely to make better judgements and engage in more effective practice if others are made participants in our research.

Personalised research involves learning together, that is learning with and from those distant in space and time as well as those most closely associated with our work. It involves a critical response to the ideas of others as well as personal self-evaluation. It creates contexts for critical conversations with those who have gone before as well as those in our learning organisation. The individual's question, 'How do I improve my

work?’ requires an investigation that is shared with others. The question then changes to ‘How do we improve our work?’ Personalised research provides a context for engagement with others, through reading and reflection as well as collaborative learning in the workplace. Like teaching, personalised research should essentially be a collaborative venture.

Personalised research may take many different forms, including:

- basic research – a systematic enquiry to acquire new knowledge
- applied research – an investigation into ways of solving a problem
- experimental research – implementing and evaluating a new approach

Personalised research has a variety of tasks. These include:

- to understand, observe, record and analyse current practice
- to explain this in relation to personal and professional theory
- to share our knowledge by involving and informing others
- to help improve our professional thinking and practice

Personalised research is a creative enterprise that takes the form and purpose that you decide. So how does one set about doing it?

The basic steps of a personalised research plan could include:

1. Identify an area you want to investigate
  - Review - we review our current practice and issues of concern,
  - Focus – we identify a question or aspect of practice to investigate,
2. Find out from others
  - Reflect – we review our current practice and find out what others think
  - Plan – we plan our investigation and select our research methods
3. Investigate for yourself
  - Investigate – we investigate some innovation or aspect of practice
  - Record – we systematically collect data and evidence about what happens
4. Evaluate what you find
  - Analyse – we review, critically analyse and evaluate the data
  - Draw conclusions – we identify what we have learnt from the research
5. Review the outcomes
  - Modify – we modify our thinking and practice in light of our research
  - Review – we reflect on our personal learning, identifying areas for future research

and so the cycle continues ...

Three processes are at work during each of these stages - critical thinking, creative action and learning. Your thinking and actions embody your learning, and your learning is informed by reflection on your actions. Thus when you come to report on your research you should show not only the actions of your research, but also the thinking and learning involved.

You can use a variety of methods to gather data about any situation, including:

- written evidence eg journals, diaries, notes, written work, documents
- visual evidence eg photos and pictures
- audio or videotape recordings
- questionnaires eg surveys or attitude scales
- interviews eg structured or semi-structured interviews
- observations eg systematic observations over time or participant observation
- experiments or tests

Personalised research informs professional development, not only yours but your colleagues and others who share in your report. Personalised research assumes you already know a great deal, but need some stimulus to find out more. For this you don't need a trainer, you need a mentor or critical friends who actively learn with and from you in a dialogue of equals. Being part of a shared enquiry means developing interpersonal

skills, sensitivity and wisdom. Developing these skills is part of the research process. The key question in personalised research is not just, 'How do I learn and find out my own answers?' The question becomes, 'How can we learn together?' By researching together you create a community of enquiry – a community that is critical, creative, collaborative and caring.

#### Further reading on action research

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