MIICE Discussion Paper 2

The role of ICT in support of multiple intelligences

Everyone who has seen the impact of ICT on learning agrees that the role of ICT in schools goes beyond the important concrete goals of

- increasing practical ICT skills in communications
- understanding of fundamental principles and insights
- development of key attitudes in areas such as enterprise, collaboration, task analysis and problem solving

The **MIICE** project grew from activities which tried to identify these key broad learning 'outcomes' from evidently successful uses of ICT in a range of Scottish schools. These antecedents can be viewed on the Scottish Interactive Technology Centre's website at

http://sitc.education.ed.ac.uk/case_studies

This paper is an attempt to identify the match between the **MIICE** framework for quality and different forms of intelligence. In particular, we have tried to 'map' **MIICE** outcomes and components against the multiple intelligences originally identified by Howard Gardner[1]

For a full explanation of the **MIICE** framework of quality, please refer to *The MIICE project - initial report*

In the established Gardner multiple intelligences model the characteristics of the types of intelligence are described as follows

1 **Linguistic** - a facility with language, patterning and systems

2 **Mathematical/logical** - liking for precision and enjoyment of abstract and structured thinking

3 **Visual/spatial** - thinking in pictures and mental images; good with maps, charts and diagrams; using movement to assist learning

4 **Musical** - sensitive to mood and emotion; enjoys rhythm; understands complex organisation of music

5 **Interpersonal** - relating well to others; mediator; good communicator

6 **Intrapersonal** - self-motivated; high degree of self-knowledge; strong sense of values

7 **Kinesthetic** - good timing; skilled at handicrafts; good control of objects; likes to act and touch

Many researchers have affirmed that development of a full range of these intelligences assists long-term learning capability in general

[1] See Postscript at the end of this paper

How can ICT contribute?

In the following table, **MIICE**'s outcomes and components - relating to the abilities and attitudes of learners (group 1) and relating to the management of learning (group 2) - are mapped against Gardner's original intelligences

Where the activities implicit in the **MIICE** component - see the **MIICE** toolbox for a full account - reflect opportunities for exercising and developing that form of intelligence, this is indicated as follows

M indicates a major contribution/relationship

m indicates a minor contribution/relationship

If conducting an audit of the elements within curriculum planning which sustain and enhance the development of particular types of intelligence, you might find it useful to examine the appropriate (Gardner) column (1 to 7) to see which (**MIICE**) components relate most closely. The **MIICE** toolbox - measures of quality in learning and teaching, and evidence related to learners aged 5 to 14 and/or learners aged 12 to 18 - will suggest ICT-related activities which might help

	Gardner's intelligences	Linguistic	Mathematical/logical	Visual/spatial	Musical	Interpersonal	Intrapersonal	Kinesthetic
		1	2	3	4	5	6	7
MIICE outcomes and components								
Outcome	Components							
Learner reflection	Taking personal responsibility for learning		m				**M**	
	Realistic but improving culture	m	m				**M**	
	Ability to articulate evaluation of actions taken	m	m			**M**		
	Developing informed attitudes in relation to ICT in society				m	m	**M**	
Skills development	Effective and responsible use of information and communications technology	m	**M**	**M**				**M**
	Creation and presentation of their own material	m	m	**M**	m	m	**M**	**M**
	Collection and analysis of information	m	**M**	m				

		1	2	3	4	5	6	7
Managing and manipulating digital information	Ability to modify information in a variety of forms, including text, graphical objects, moving images, sounds and web pages	m		**M**	m		m	**M**
	A problem-solving approach		**M**				m	
	Controlling, modelling and exploring within the digital environment		**M**	m	m		m	m
Shared planning/ Organisation	Working in groups				m	**M**	m	
	Working with the teacher	m			m	**M**	m	
	Making the most of learning resources						**M**	m
	A problem solving approach		**M**				m	
Investigatory learning	Searching and researching	**M**	**M**				**M**	
	Task analysis skills	m	**M**	m			m	
	Collection and analysis of information	m	**M**	m				
Shared learning	Communicating and collaborating	**M**			m	**M**		
	Working in groups				m	**M**	m	
Motivation	Enthusiasm and enterprise						**M**	
	Pride in work			m			**M**	
	Enterprise and active participation in their own learning		m			m	**M**	
Enhancing learning outcomes	Progression in learning		**M**				m	
	Development of new teaching styles			m	m	m	**M**	m
	Enable learners to modify information in a variety of forms, including text, graphical objects, moving images, sounds	m		**M**	m		m	m
	Encourage development of informed attitudes in relation to ICT in society				m	**M**	m	
Quality of outcomes	Assessment policies	m	m				**M**	
	Relationship to development planning priorities							
	Planning of resources		**M**					m
	Breadth of experience of ICT use in context					**M**		

		1	2	3	4	5	6	7
Self esteem/ confidence	Use of ICT to enhance school ethos					m	**M**	
	Encourage pride in work			m			**M**	
	Encourage enterprise and the exploration of new approaches		m			m	**M**	
Major relationships [M]		2	10	4	0	7	14	3
Minor relationships [m]		11	7	7	11	6	11	5

Postscript

Howard Gardner has recently (1995) identified an eighth form of intelligence which he calls 'naturalist' and describes as an ability to recognise flora and fauna, to make other consequential distinctions in the natural world and to use this ability productively. He concedes that, other than in 'living off the land' the likely modern manifestation of this form of intelligence may be used in identifying and categorising (eg recognising, sorting and organising in such youthful interests as automobiles and training shoes). Some have suggested that it is a particular incarnation of the logical-mathematical intelligence

Within the **MIICE** framework, only - possibly - Collection and analysis of information (in both *Skills development* and *Investigatory learning*) and Searching and researching (in *Investigatory learning*) might help to strengthen this form of intelligence