

## WHAT IS INTELLIGENCE?

New research over the last twelve years has directed the attention of educators towards a reconceptualisation of what ‘intelligence’ really is. Educators’ conceptualisation of the construct of intelligence impacts on student learning.

### The Traditional Model

For nearly a century there has been a strongly held belief in both psychology and education that intelligence is a single underlying general-ability characteristic that accounts for differences in people’s reasoning and learning. This single characteristic was called ‘general intelligence’. It was assumed that everyone could be classified according to how much intelligence they had or how ‘smart’ they were. Standard IQ tests were based on this traditional belief about one single intelligence. However, intelligence isn’t a ‘fact’. It can’t be seen, only inferred from performance and behaviour on specific tasks. It is no more than a theoretical construct that has been hypothesised to fit the available research data.

### The Multiple Intelligences Model

More recently, several theorists and researchers have challenged this traditional conceptualisation of intelligence as a single entity that can be measured simply via IQ tests (e.g. Gardner 1999; Sternberg 2000). Several theorists have new conceptualisations that ‘pluralise’ human mental abilities and broaden the notion of intelligence. The most detailed, complex and acclaimed of these is the model proposed by Professor Howard Gardner, a psychologist at Harvard University.

Howard Gardner proposes an alternative conceptualisation of intelligence based around the notion that there are multiple intelligences, not just one. As a result of his own research and practice with brain-injured patients over many years, and on the basis of his review of hundreds of published research studies from evolutionary biology, developmental psychology, cognition, neuropsychology and psychometrics, he proposes eight different kinds of intelligence that underlie human thinking and learning. He argues that the concept of a single IQ score to symbolise all that the human mind is capable of puts unnecessary and artificial limitations on our understanding of intellectual endeavour. Although he argues for a strong heritability factor in each of the intelligences, Gardner also places strong emphasis on the importance of educational and cultural experiences and opportunities in influencing people’s level of functioning in each of the intelligences.

The eight intelligences that Gardner has identified in his model are:

- Verbal–linguistic intelligence
- Logical–mathematical intelligence
- Visual–spatial intelligence
- Bodily–kinaesthetic intelligence
- Musical intelligence
- Interpersonal intelligence
- Intrapersonal intelligence
- Naturalist intelligence.

## Gardner's Definition of Intelligence

Gardner (1999) defines intelligence as a biopsychological potential to process information in order to solve problems or create products that are of value to a specific culture. His model is derived from a synthesis of a wealth of empirical data from disciplines that had not previously been considered in defining intelligence. From these data he has identified eight criteria to determine which sets of human capacities should be identified as a distinct form of intelligence. These are his eight criteria.

### 1. Brain damage

*It should be possible to isolate an intelligence in cases of brain damage.*

Studies of people who have suffered some form of brain damage show how only specific parts of the brain can be affected. For example, some stroke patients can have unimpaired speech but not be able to find their way around their home. This suggests that the two separate intelligences of linguistic and visual-spatial intelligence are involved.

### 2. Evolutionary origin

*There should be evidence for an intelligence's plausibility and autonomy in evolutionary history.*

Various forms of spatial and kinaesthetic intelligence have developed in other mammals and musical intelligence has evolved in birds.

### 3. Distinctive developmental paths

*An intelligence has to have a distinct developmental history with a definable set of expert 'end-state' performances.*

Comparing word intelligence with logic and maths intelligence provides an example of intelligences with distinctive developmental histories. Word intelligence develops very early in most young children whereas logic and maths intelligence emerges later. However, logic and maths intelligence 'peaks' earlier than word intelligence.

Each of the eight intelligences identified so far is connected to a specific kind of professional expertise (i.e. expert end-state performances).

For example, mathematicians and scientists are 'experts' in the skills related to logic and maths intelligence, graphic artists are 'experts' in the skills related to space and vision intelligence, and musicians are 'experts' in the skills related to music intelligence.

### 4. Special populations

*An intelligence must exist within special populations, such as 'idiot savants' and prodigies.*

Savants show stunning strength in one area such as numerical calculation, musical performance or drawing, alongside other ordinary abilities or even marked deficits in areas like communication, language and sensitivity to others. Prodigies show outstanding skills in a specific performance area such as music (e.g. Mozart). The study of such individuals can enable specific intelligences to be analysed and observed in relative isolation from each other.

### **5. Support from experimental psychological tasks**

*An intelligence needs to demonstrate relatively independent operations resulting from specific skills training.*

Evidence from cognitive psychology also provides support for the relative independence of intelligences. For example, experimental studies show no cross-interference between linguistic and musical input in contrast to two linguistic tasks. Similarly, Gardner indicated that training in one intelligence such as mathematics did not enhance a student's skills in another intelligence such as musical ability.

### **6. Psychometric findings**

*An intelligence should have only a low correlation with other intelligences in psychometric studies.*

Although Gardner questions the unitary psychometric approach to intellectual assessment, he notes that a reinterpretation of these findings can support MI theory—for example, much research confirms the separation of verbal and spatial factors.

### **7. Core information-processing operations**

*An intelligence must have its own identifiable core operation or set of operations.*

Examples of identifiable core operations in linguistic intelligence are phonemic discrimination, command of syntax and the acquisition of word meanings; in music

intelligence, examples are sensitivity to pitch, rhythm, timbre and harmony.

### **8. A symbol system**

*An intelligence must be susceptible to being programmed in a symbol system.*

Many such symbol systems exist: language (linguistic intelligence), numbers (logic and maths intelligence), dance (body intelligence) and musical notations (music intelligence).

The eight intelligences that currently meet these eight criteria are linguistic, logical–mathematical, visual–spatial, kinaesthetic, musical, naturalist, interpersonal and intrapersonal.

### **Existential intelligence**

Existential intelligence entails the human capacity to pose and ponder the biggest questions: Who are we? Why are we here? What is going to happen to us? Why do we die? What is it all about in the end? All over the world many religious, artistic, philosophical and mythic symbol systems attempt to provide answers to these questions. This intelligence fits Gardner's psychological and biological criteria for an intelligence. For example, existential intelligence has a developmental trajectory, it has various symbol systems and certain individuals stand out from an early age in their preoccupation with these big questions. However, it does not meet Gardner's other cognitive criteria for an intelligence such as having a distinctive evolutionary history or dedicated neural or brain centres. Therefore Gardner refers to 8½ intelligences rather than seeing existential (or spiritual) intelligence as a fully fledged ninth intelligence.

## Variations Within Each Intelligence

Each intelligence includes many different ‘clusters’ of skills. People who have a strength in any one of the eight intelligences may not all show the same cluster of skills within that intelligence. For example, some students who are strong in linguistic intelligence are better at writing and speaking; others are better at reading and word analysis. The same skills cluster can also be demonstrated in different ways. For example, one person who is skilled at writing and speaking may demonstrate that cluster of skills in writing novels and giving talks. Another may use the same cluster of skills to make election speeches or write poetry. With spatial–visual intelligence, some people, such as fashion designers, show this intelligence by using the specific skills cluster of ‘analysis of colour and contrast’ and demonstrate their competence by designing aesthetically pleasing clothes or furniture. Others, such as engineers, show this same intelligence but use the skills cluster of ‘determining spatial position in relation to other objects and using technical drawing skills’ in a more scientific/technical context, such as designing constructions or analysing why things don’t fit well together.

One more example: individuals who are strong in interpersonal intelligence may show great variation in what they do well. One may be very intuitive about other people’s behaviour, very sensitive to their feelings and show enormous compassion for others. Another person, equally strong in interpersonal intelligence, may excel in social skills or leadership skills but not show as much sensitivity to others’ feelings or compassion. This highlights the role of environmental factors. Gardner has made the point very clearly that

intelligences *per se* are ‘amoral’. This means an individual can utilise a strength in an intelligence for positive or negative purposes. For example, both Goethe and Goebbels showed great strengths in linguistic intelligence but Goethe used his strength to write beautiful prose and poetry while Goebbels used his to incite hatred during the time of Nazi domination of Germany.

In some cases, the variations between people who are equally strong in the same intelligence may be reflected in physical differences. For example, an athlete and a ballet dancer both show strengths in kinaesthetic intelligence but their different body shapes, and variations in physical factors such as balance and respiratory functions, will influence not only their different skills cluster but also the domain (athletics or dance) in which they demonstrate them.

Similarly, different cultural, family and educational environments may influence people to develop skills in some skills clusters more than others and use them in different contexts. For example, oral story telling is highly valued in the traditional Australian Aboriginal culture but less so in more urbanised cultures.

### *Everyone has All Eight Intelligences*

Although everyone possesses all eight intelligences, each person differs in where their strengths lie and hence their profile across the eight. For most of us, two or three intelligences are usually stronger than others. These relative differences in intellectual strengths can have a significant impact on our lives, on the things that interest us, both in and out of school, the subjects we take at school and our career choices.

A more detailed theoretical and research background to Gardner's model can be found in his most recent book *Intelligence reframed. Multiple intelligences for the 21st century*. Further information can also be obtained in the references listed at the end of the book.

## Recent Research on Multiple Intelligences

Since its publication in 1983, MI theory has had many critics. Yet Howard Gardner's theory of multiple intelligences has now been adopted and implemented for use in schools on six continents and at all year levels. Gardner explained that translating MI theory into practice:

*... allows individuals (particularly parents and teachers) in a non-threatening way to look more carefully at children, to examine their own assumptions about potential and achievement, to consider a variety of approaches to teaching, to try out alternative forms of assessment – in short, to begin the fundamental kind of self-transformation that is necessary if schooling is to improve significantly (Gardner 1994, p.5).*

The most comprehensive research data on translating MI theory into practice was reported by the project on Schools Using MI Theory (SUMIT) at Harvard Project Zero (Kornhaber 2004). Forty-one diverse schools that had been using MI theory for at least three years were investigated. A second more in-depth analysis was made of ten of these schools. The results showed that the ten schools reported strong positive associations between their adoption of the MI model and four important outcomes:

- Nearly 80% of the schools reported improvements in standardised test scores and

slightly more than half of the schools attributed this improvement to their adoption of the MI model.

- 80% of the schools reported improvements in student behaviour, with slightly more than half associating this improvement with their adoption of the MI model.
- 80% of the schools reported increased parent participation, with 60% associating the increase with the school's adoption of the MI model.
- 80% of the schools reported a range of improvements for students with learning disabilities (e.g. improved learning, improved motivation, effort or social adjustment), with all but one of the schools associating this improvement with their adoption of the MI model.

It makes sense that the adoption of the MI model is strongly associated with these outcomes. Providing multiple entry points to 'uncover' the curriculum and motivate and engage students in learning would logically lead to better standardised test outcomes. The fact that students with learning difficulties benefited in particular is not surprising. If students' strengths in different intelligences are valued and catered for, then logically all students will be more engaged in learning and less likely to present as discipline problems. Kornhaber's classroom observations revealed that students with special needs were commonly working constructively within regular classrooms and typically with the same high level of engagement as other students (see Schirduan & Case 2004). In schools that use MI there may be more opportunities for a wider range of parents to feel comfortable in participating in school activities. Increased parent participation is significant because it is correlated with better student achievement.

The one area that teachers in schools have most control over is *how* they teach the curriculum. The focus in this book is not on possible empirical concerns about MI theory but how the theory enriches teachers' practice, helps them to differentiate the curriculum and engages a wider range of students in successful learning.

## The Implications of an MI Model for Education

The clearest implication from the MI model is that a uniform 'one size fits all' approach to education is likely to serve only a minority of students (Gardner 1995). The MI model fits with what teachers have always known: that different students have different intellectual strengths. While some students are good readers or good at maths, others will be better at art, sport, music, investigating and working with nature, showing leadership skills or demonstrating a marked ability to understand themselves and direct their own thinking and behaviour. Now, for many educators the significant question is not 'How smart is this student?' but 'How is this student smart?' In other words, 'What are the relative strengths of this student across all eight intelligences?'

Here are some simple examples of students with different strengths across a range of intelligences.

- Kim is articulate and has an extensive vocabulary that she uses in appropriate ways. She has always been an avid reader and loves word puzzles and games. Kim is strong in word intelligence.
- Steve has a great fascination with numbers, sequential patterns and logical problems and is very skilled at playing chess and other strategy games on the computer. He talks all the time about 'probabilities' (e.g. 'the probability of my getting to basketball training today is about 60%'). Steve is strong in logic and maths intelligence.
- Tess is very capable at designing things, drawing and painting and shows amazing ability to recall the visual details of things she has seen. Tess is strong in space and vision intelligence.
- Chris has many friends and has demonstrated advanced social skills and (people) organisational skills from an early age. He is good at working out how to solve friendship problems so that everyone ends up feeling okay about the outcome. Chris is strong in people intelligence.
- Ellie is a graceful and well-coordinated student who performs well in dancing and gymnastics. When she was very little she could perform ballet steps that were more typically learned by older students in her ballet class. Ellie is strong in body intelligence.
- Murat wants to be a musician when he leaves school. He constantly beats out a rhythm with a pencil or pen and can play several different musical instruments. Murat is strong in music intelligence.
- Adam is a self-reflective student who is able to judge his own strengths and weaknesses and uses this self-knowledge to make the best decisions for himself. More than other students, he seems to have mapped out a clear path for himself and strategies to help him achieve his goals along the way. Adam is strong in self intelligence.
- Jake has always been fascinated by nature, especially insects and animals. He successfully breeds white mice to sell to the local pet shop and is a keen observer of the effects of things

such as hot or cold weather on his animals' behaviour. Jake is strong in naturalist intelligence.

These are all students who are intelligent in different ways. In the past, verbal skills and logic and maths skills were equated with intelligence and skills in other areas such as art, music or social behaviour were seen simply as 'talents'. Hence IQ tests focused mostly on testing language and mathematical skills. Gardner's model of multiple intelligences has changed this perception. Now teachers are aware that an MI model makes more sense for classroom practice than a single intelligence model.

## Multiple Entry Points into the Curriculum

Providing different entry points into the curriculum can be an effective strategy for reaching more students and raising different students' interest and curiosity about new subject matter. Given students' strengths in different intelligences some students learn better from narrative entry points and others from social or artistic entries. These multiple entry points include the following:

**Narrative:** telling stories about the topic and the people involved with it (e.g. the story of Charles Darwin for evolution or Shackleton for polar exploration).

**Quantitative:** using quantitative examples connected to the topic (e.g. twin study correlation evidence for the heritability of intelligence or mental illness or introducing a topic of animals by posing questions about the heaviest, fastest, biggest etc).

**Logic:** identifying the key elements or units and exploring their logical connections (e.g. the effects of the sun on water evaporation or photosynthesis).

**Existential:** addressing big questions such as the nature of truth or beauty, justice or freedom, life or death.

**Aesthetic:** examining different works of art or music or analysing the artistic properties of different works (e.g. analysing the visual effects in a video of *Romeo and Juliet* or showing the beautiful photos of volcanic eruptions or beginning a topic with music to create the mood).

**Hands-on:** working directly with concrete examples (e.g. working with blocks to understand mathematical computations or mixing colours to understand the colour wheel).

**Cooperative or social:** engaging in cooperative group work or problem solving where each person is individually accountable and the group works interdependently.

It's not necessary and even foolish to think that every topic should be approached in six or eight different ways. Yet it is equally misguided to approach each topic in only one way. Any topic of significance can be represented mentally in a number of different ways and the more deeply students understand the topic, the more ways they can appropriately conceptualise it.

## Terminology used in this Book

The chart below shows Gardner's terminology for the eight intelligences and the terminology used in this book. With Gardner's approval, we have used similar terms to his but simplified to make the labels more user-friendly for teachers and students.

Gardner's Terms	Our Terms
Verbal–linguistic intelligence	Word intelligence
Logical–mathematical intelligence	Logic and maths intelligence
Visual–spatial intelligence	Space and vision intelligence
Bodily–kinaesthetic intelligence	Body intelligence
Musical intelligence	Music intelligence
Interpersonal intelligence	People intelligence
Intrapersonal intelligence	Self intelligence
Naturalist intelligence	Naturalist intelligence

The BLM on page 11 provides a simple summary of the MI model for display and communication.

## Summary

The MI model has provided education with new understandings about student motivation and diversity. The model stresses the importance of providing a variety of content and ways in which students can learn and demonstrate what they have learned. Once important learning outcomes are defined, the MI model can provide a framework for generating a range of learning processes and products as diverse as cooperative story telling, a debate, a collection of statistics, a flow chart, hands-on experimentation or simulation, an artistic exploration, the creation of theme-related music or a sound track, or the setting of and reflection on personal or learning goals.

Of course, many teachers already provide a range of ways in which students can learn and demonstrate their learning but, for most, that variety has been limited by the assumption that

intelligence is singular not plural. When beginning to use an MI framework for curriculum programming, it is a good starting point to audit what choices you are already providing for your students. Additionally, it is likely that most teachers have become teachers because they are good at people intelligence (the core nature of teaching) plus those intelligences that traditionally underpin 'school'—that is, word intelligence and/or logic and maths intelligence. So teachers often feel some apprehension about guiding students into some of the other tasks and ways of learning. The MI framework helps teachers to become more systematic in providing a diversity of learning and teaching strategies across all eight intelligences, rather than simply using the strategies that are in the teacher's own comfort zone.

The educational implications of the MI model are that teachers need to diversify what they teach, how they teach it and how they assess what has been learned to cater for students with different intellectual profiles. When a unit of work or lesson content is approached through several intelligences, students:

- are more engaged and confident because they can demonstrate what they have learned in ways that are more comfortable to them and this is more likely to lead to successful learning outcomes
- gain invaluable self-knowledge about their relative strengths, which contributes to their optimism about their learning capabilities in the short term, and their optimistic career planning in the longer term
- gain a greater sense of competence when they realise they are capable of representing what they have learned in more than one way
- develop respect for the demonstrated and varied strengths of their classmates.

## HOWARD GARDNER'S MODEL OF MULTIPLE INTELLIGENCES

### Word Intelligence

This intelligence involves the ability to think in words, use words to express and appreciate complex meanings and acquire other languages. It includes skills in reading, writing stories, speaking, debating, creating poetry, doing word games and puzzles, writing essays and expressing ideas in words.

### Logic and Maths Intelligence

This intelligence involves the ability to reason logically about propositions, to make inferences, to investigate and test ideas and solutions scientifically and systematically, to calculate, and carry out complex mathematical operations. It includes skills in logical problem solving, ordering objects and numbers, classifying, using mathematical operations, identifying patterns, experimenting, and developing logical arguments.

### Space and Vision Intelligence

This intelligence involves the ability to reason both two-dimensionally and three-dimensionally, navigate oneself and objects through space, produce or decode graphic information, visualise before construction, create visual representations of the world and recreate detailed visual images from memory. It includes skills in artwork, making technical drawings, using maps, making diagrams, solving visual puzzles, navigation, piloting, drawing plans, graphing, completing mazes, designing, and identifying spatial errors.

### Music Intelligence

This intelligence involves creating, reasoning about and understanding meanings made out of sounds. The focus is on sensitivity to pitch, timbre, timing and the rhythm of sounds. It includes skills in composing, performing and appreciating musical patterns, differentiating between sounds, songs and tunes, singing, playing musical instruments, analysing musical elements and creating sound effects.

### Body Intelligence

This intelligence involves the ability to solve problems or to create products using all or parts of the body. It includes skills in performing sequences of movements, communicating ideas and emotions via the body, playing sport, exercising or gymnastics, dancing, miming, making and constructing things and fixing things.

### People Intelligence

This intelligence involves the ability to recognise and make distinctions among other people, to identify and respond to others' feelings and moods, behaviour and intentions and to work effectively with others. It includes skills in working cooperatively, interacting socially, maintaining relationships, organising and managing others, negotiation and mediation, leadership, nurturance and empathy, and sensitivity to others. It can also involve skills in character acting.

### Self Intelligence

This intelligence involves the ability to generate a coherent mental model of oneself, and to use this self-knowledge to plan and direct one's life effectively. It includes skills in self-reflection, goal setting, metacognition, emotional literacy and self-analysis of one's own strengths, limitations, behaviour and fears.

### Naturalist Intelligence

This intelligence involves an ability to understand, reason and solve problems in the natural environment. It includes skills in differentiating between and categorising flora, fauna, rocks, landforms and fossils, breeding, working with and training animals, growing things, tracking, studying natural landforms such as rivers, mountains and volcanoes and protecting the natural environment.

## HOWARD GARDNER'S MODEL OF MULTIPLE INTELLIGENCES



### *Word Intelligence*

Using language, reading, writing, speaking, debating, creating poetry, doing word puzzles, expressing ideas in words, learning new languages.



### *Body Intelligence*

Playing sport, controlling movement, miming, acting, learning actively, dancing, manipulating objects, making things, fixing things.



### *Music Intelligence*

Sensitivity to pitch, timbre, timing and rhythm, memorising songs and tunes, playing a musical instrument, creating sound effects, recognising songs.

### *Logic and Maths Intelligence*

Solving maths problems, calculating, predicting, using logical argument, reasoning, researching, experimenting, analysing, hypothesising, ordering, making patterns, categorising.



### *Naturalist Intelligence*

Identifying differences and classifying insects, animals, plants, rocks and landscapes, caring for and training animals, growing things.



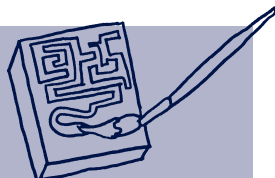
### *People Intelligence*

Understanding human behaviour and motivation, interacting socially, cooperation, leadership, organising and managing others, negotiation, mediation, empathy and sensitivity to others, and complex acting.



### *Space and Vision Intelligence*

Creating artwork, drawing, painting, creating mental pictures, mapping, making diagrams, solving visual puzzles, designing, using graphics, photography, navigation, drawing plans.



### *Self Intelligence*

Self-awareness, self-understanding, goal setting, self-discipline, reflection, analysis of own learning and feelings, identifying one's own strengths and weaknesses, using one's own experiences to understand and explain.



## MI PROCESSES, PRODUCTS AND CONTENT FOCUS CHARTS

This section provides MI charts with processes, products and content focus, one for each of the eight intelligences. Use these charts to create your

own activities and lessons across the eight intelligences.

### WORD INTELLIGENCE

Useful Process Verbs	Products	Content Focus
Write	Anagram	Fiction
Tell	Book	Picture books
Listen	Book review	Nonfiction
Translate	Booklet (words)	Word puzzles
Spell	Bumper stickers	Newspapers
Read	Changed ending	Magazine articles
Summarise	Creative writing	Proverbs
Retell	Cross-offs	Literature
Debate*	Crossword	Poetry
Argue	Debate *	Topic words and terms
Define title	Definition	Plays
Narrate	Description	Articles
List	Dialogue	Research reports
Explain	Imaginary diary (e.g. of a red cell)	Texts
Recite	Dictation	Written tests
Rhyme	Directions	Written summary
Learn other languages	Email	Authors
Describe	Essay	Scripts
	Foreign language	Quotes
	Glossary	Dictionaries
	Instructions	Themes of communication and emotive effects
	Letter	
	Limerick	
	Lyrics	
	Manual	
	Menu	
	Metaphors and similes	
	Myth/legend	
	Narration	
	Narrative	
	Newspaper article	
	Newsletter	
	Petition	
	Poem	
	Pun	
	Reading	
	Recipe (words)	
	Recount	
	Report	
	Research (words)	
	Review	
	Riddle	
	Script (drama/ TV/radio/video)	
	Sentences	
	Skit	
	Speech	
	Spelling	
	Story	
	Story sequel	
	Summaries	
	Summary	
	Text (brochure/ menu, etc)	
	Titles (captions)	
	Translation	
	Word games	
	Word list	
	Word puzzles	
	Wordsearch	
	Word web	
	Written directions	

\*Sometimes categorised as logic and maths

## LOGIC AND MATHS INTELLIGENCE

Useful Process	Verbs	Products	Content Focus
Investigate	Algorithm	Maths solutions	Mathematical processes
Solve	Analogy	Matrix	Mathematical concepts
Group	Attribute list	Measurements	Scientific processes
Explain	Averages	Mechanical	Scientific concepts
Test	Calculations	problems and solutions	Scientific methods
Hypothesise	Classification systems	Number facts	Logical premises
Predict	Codes	Number pattern	Time
Calculate	Computer program	Pattern	Statistics
Add	Concept map*	Percentages	Research data
Multiply	Data analysis and patterns	Probabilities	Research designs
Subtract	Data chart	Quality control	Experiments
Divide	Equations	Rubric	Scientists
Find equivalence	Estimates	Scale drawing	Inventors
Estimate	Experiment	Science problems	Mathematicians
Collate	Experiment results	Sequence	Budgets
Order	Geometry	Spreadsheet	Themes of logic and reason
Sequence	Graphs*	Statistics	
Measure	Hypotheses	Syllogisms	
Prove	Investigations	Tables	
Control for	Itinerary	Timelines	
Code	Maths problems	Venn diagram*	
Graph		What if . . .	
Decipher			
Formulate			
Balance			

\*Sometimes categorised as space and vision

## SPACE AND VISION INTELLIGENCE

Useful Process			
Verbs		Products	Content Focus
Draw	Advertisements	Montage	Spatial and visual concepts and processes e.g. symmetry, colour, perspective, balance, etc
Sketch	Animation	Mural	
Sculpt	Art installation	Overhead	Artistic works (contemporary and historical)
Visualise	Artwork	transparency	Illustrations
Illustrate	Art reviews	Painting	Fashion and costumes of different eras
Design	Banner	Pamphlet	Fabric
Print	Board games	Perspective drawings	Graphical data
Paint	Brochure	Photo essay	Graphic programs
Read a map	Calligraphy	Photography	Charts
Make a visual game	Card games	Pictures	Art history and styles
Film	Caricature	Picture books	Cross-cultural artworks
Videotape	Cartoon	Playdoh	Architecture of different eras
Make	Chart	Pop-up	Calligraphy
Animate	Collage	Poster	Videos and film
Photograph	Colour scheme	Powerpoint productions	Maps
Colour	Computer games	Quilt	Street directory
Map	Concept map (and software)*	Scale drawing	Artists
Chart	Costume design	Screenprinting	Architects
	Covers (CD/book/magazine/DVD)	Scroll	Graphic designers
	Cross-sections	Sculpture	Film makers and films/videos
	Designs	Shapes	Symbols
	Diorama	Sign	Logos and labels
	Display	Sketch	Jigsaws
	Fashion design	Slide show	Computer programs
	Flow chart	Spreadsheets	Computer games
	Frieze	Stage props (design)	Landscapes
	Graphic design	Stage set design	Themes of balance and aesthetics
	Graphic organisers	Storymap	
	Graphs*	Symbol	
	Illustration	Tangram	
	Jigsaw	Technical drawing	
	Labels	Topic web	
	Lighting plan	Venn diagram*	
	Logo	Video/film	
	Map drawing	Video/film review	
	Maze	Visual games	
	Mindmap	Visual prompts	
	Mobile	Visual illusions	
		Websites	

\*Sometimes categorised as logic and maths

## BODY INTELLIGENCE

Useful Process		
Verbs	Products	Content Focus
Mime	Body flow chart	Dance
Dance	Charades	Sport
Move like	Choreography	Ballet
Exercise	Construction (e.g. buildings/sets/ props)	Sporting performances
Walk/hike	Dance	Sport videos
Hit/throw/catch	Dramatic performance as in charades/miming: acting in character has strong people component	Crafts
Swim	Exercise routines	Carpentry
Juggle	Geoboard	Buildings
Model	Handcrafts	Engines
Choreograph	Jewellery making	Mechanical systems
Jump/hop	Fashion garment	Use of equipment e.g. microscope, lathes, sewing machine, woodwork equipment
Demonstrate	Food products	Games/construction/craftwork of historical times
Manipulate	Mechanics	Sculpture/construction/artworks
Make	Metalwork products	Themes of health and wellbeing
Fix	Mime	Games and dances of different eras
Make model	Mobiles	Design and technology
Build	Models	
Construct	Orienteering performance	
Find	Papier-mâché maps	
Skip/run	Performance review (sport/dance/ drama)	
Sew/crochet/knit	Physical game	
Use tools	Pop-up books/cards	
Play sports	Props	
Use construction toys (e.g. Lego)	Puppet	
Sculpt	Scavenger hunt	
Cut and paste	Sculpture/installation	
Perform	Sporting activities	
Dissect	Sports performance	
Assemble	Woodwork products	
Take apart/ deconstruct		
Use equipment		

## MUSIC INTELLIGENCE

Useful Process Verbs	Products	Content Focus
Rhyme	Acapella	Music and songs of different eras
Hum	Body and mouth percussion	Music of different cultures
Tap out the beat	Chant	Music of different composers
Chant	Choral reading	Environmental sounds
Whistle	Choral singing	Musical concepts and processes e.g. tempo, mood, genres, styles
Rap	Composition	CDs
Sing	Hymn	Musical performances
Compose	Instrument recognition	Songs
Copy sounds	Jingle	Classical music
Clap/snap/bang in tune	Mood music	Sound effects
Play (a musical instrument)	Musical games	Sound tracks
Record	Musical memory device	Musical instruments
Hear	Musical composition	Raps
	Musical patterns/analysis	Hymns
	Music analysis	Nursery rhymes
	Musical performance	Musical technology
	Musical review	Themes of sound effects and musical appreciation
	Rap	
	Song collections	
	Songs	
	Sound effects	
	Soundstory	
	Sound track	