

Multiple intelligence theory

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Howard Gardner, Multiple Intelligences and Education Howard Earl Gardner's (1943-) work has been marked by a desire not to just describe the world but to help to create the conditions to change it. The scale of his contribution can be gauged from following comments in his introduction to the tenth anniversary edition of Howard Gardner's classic work *Frames of Mind*. The theory of multiple intelligences: In the heyday of the psychometric and behaviorist eras, it was generally believed that intelligence was a single entity that was inherited; and that human beings - initially a blank slate - could be trained to learn anything, provided that it was presented in an appropriate way. Nowadays an increasing number of researchers believe precisely the opposite; that there exists a multitude of intelligences, quite independent of each other; that each intelligence has its own strengths and constraints; that the mind is far from unencumbered at birth; and that it is unexpectedly difficult to teach things that go against early 'naive' theories of that challenge the natural lines of force within an intelligence and its matching domains. (Gardner 1993: xxiii) One of the main impetuses for this movement has been Howard Gardner's work. He has been, in Smith and Smith's (1994) terms, a paradigm shifter. Howard Gardner has questioned the idea that intelligence is a single entity, that it results from a single factor, and that it can be measured simply via IQ tests. He has also challenged the cognitive development work of Piaget. Bringing forward evidence to show that at any one time a child may be at very different stages for example, in number development and spatial/visual maturation, Howard Gardner has successfully undermined the idea that knowledge at any one particular developmental stage hangs together in a structured whole. In this article we

explore Howard Gardner's contribution and the use to which it has been put by educators. Howard Gardner - a life Howard Gardner was born in Scranton, Pennsylvania in 1943. His parents had fled from Nürnberg in Germany in 1938 with their three-year old son, Eric. Just prior to Howard Gardner's birth Eric was killed in a sleighing accident. These two events were not discussed during Gardner's childhood, but were to have a very significant impact upon his thinking and development (Gardner 1989: 22). The opportunities for risky physical activity were limited creative and intellectual pursuits encouraged. As Howard began to discover the family's 'secret history' (and Jewish identity) he began to recognize that he was different both from his parents and from his peers. His parents wanted to send Howard Gardner to Phillips Academy in Andover Massachusetts - but he refused. Instead he went to a nearby preparatory school in Kingston, Pennsylvania (Wyoming Seminary). He appears to have embraced the opportunities there - and to have elicited the support and interest of some very able teachers. From there Howard Gardner went to Harvard University to study history in readiness for a career in the law. However, he was lucky enough to have Eric Erikson as a tutor. In Howard Gardner's words Erikson probably 'sealed' his ambition to be a scholar (1989: 23). But there were others: My mind was really opened when I went to Harvard College and had the opportunity to study under individuals—such as psychoanalyst Erik Erikson, sociologist David Riesman, and cognitive psychologist Jerome Bruner—who were creating knowledge about human beings. That helped set me on the course of investigating human nature, particularly how human beings think. (Howard Gardner quoted by Marge Sherer 1999) Howard Gardner's interest in psychology and the social

sciences grew (his senior thesis was on a new California retirement community) and he graduated summa cum laude in 1965. Howard Gardner then went to work for a brief period with Jerome Bruner on the famous MACOS Project ('Man: A course of study'). Bruner's work, especially in *The Process of Education* (1960) was to make a profound impact, and the questions that the programme asked were to find an echo in Gardner's subsequent interests. During this time he began to read the work of Claude Levi-Strauss and Jean Piaget in more details. He entered Harvard's doctoral programme in 1966, and in the following year became part of the Project Zero research team on arts education (with which he has remained involved to the present). Howard Gardner completed his PhD in 1971 (his dissertation was on style sensitivity in children). He remained at Harvard. Alongside his work with Project Zero (he now co-directs it with David Perkins) he was a lecturer (1971-1986) and then professor in education (1986-). His first major book, *The Shattered Mind* appeared in 1975 and some fifteen have followed. Howard Gardner is currently Hobbs Professor of Cognition and Education at the Harvard Graduate School of Education and adjunct professor of neurology at the Boston University School of Medicine. Project Zero provided an environment in which Howard Gardner could begin to explore his interest in human cognition. He proceeded in a very different direction to the dominant discourses associated with Piaget and with psychometric testing. Project Zero developed as a major research centre for education - and provided an intellectual home for a significant grouping of researchers. A key moment came with the establishment of the Project on Human Potential in the late 1970s (funded by Bernard van Leer Foundation) to 'assess the state

of scientific knowledge concerning human potential and its realization'. The result was *Frames of Mind* (1983) Howard Gardner's first full-length statement of his theory of multiple intelligences. Howard Gardner on multiple intelligences - the initial listing Howard Gardner viewed intelligence as 'the capacity to solve problems or to fashion products that are valued in one or more cultural setting' (Gardner & Hatch, 1989). He reviewed the literature using eight criteria or 'signs' of an intelligence: Potential isolation by brain damage. The existence of idiots savants, prodigies and other exceptional individuals. An identifiable core operation or set of operations. A distinctive development history, along with a definable set of 'end-state' performances. An evolutionary history and evolutionary plausibility. Support from experimental psychological tasks. Support from psychometric findings. Susceptibility to encoding in a symbol system. (Howard Gardner 1983: 62-69) Candidates for the title 'an intelligence' had to satisfy a range of these criteria and must include, as a prerequisite, the ability to resolve 'genuine problems of difficulties' (ibid.: 60) within certain cultural settings. Making judgements about this was, however, 'reminiscent more of an artistic judgement than of a scientific assessment' (ibid.: 62). Howard Gardner initially formulated a list of seven intelligences. His listing was provisional. The first two are ones that have been typically valued in schools; the next three are usually associated with the arts; and the final two are what Howard Gardner called 'personal intelligences' (Gardner 1999: 41-43). Linguistic intelligence involves sensitivity to spoken and written language, the ability to learn languages, and the capacity to use language to accomplish certain goals. This intelligence includes the ability to effectively use language to

express oneself rhetorically or poetically; and language as a means to remember information. Writers, poets, lawyers and speakers are among those that Howard Gardner sees as having high linguistic intelligence. Logical-mathematical intelligence consists of the capacity to analyze problems logically, carry out mathematical operations, and investigate issues scientifically. In Howard Gardner's words, it entails the ability to detect patterns, reason deductively and think logically. This intelligence is most often associated with scientific and mathematical thinking. Musical intelligence involves skill in the performance, composition, and appreciation of musical patterns. It encompasses the capacity to recognize and compose musical pitches, tones, and rhythms. According to Howard Gardner musical intelligence runs in an almost structural parallel to linguistic intelligence. Bodily-kinesthetic intelligence entails the potential of using one's whole body or parts of the body to solve problems. It is the ability to use mental abilities to coordinate bodily movements. Howard Gardner sees mental and physical activity as related. Spatial intelligence involves the potential to recognize and use the patterns of wide space and more confined areas. Interpersonal intelligence is concerned with the capacity to understand the intentions, motivations and desires of other people. It allows people to work effectively with others. Educators, salespeople, religious and political leaders and counsellors all need a well-developed interpersonal intelligence. Intrapersonal intelligence entails the capacity to understand oneself, to appreciate one's feelings, fears and motivations. In Howard Gardner's view it involves having an effective working model of ourselves, and to be able to use such information to regulate our lives. In *Frames of Mind* Howard

Gardner treated the personal intelligences 'as a piece'. Because of their close association in most cultures, they are often linked together. However, he still argues that it makes sense to think of two forms of personal intelligence. Gardner claimed that the seven intelligences rarely operate independently. They are used at the same time and tend to complement each other as people develop skills or solve problems. In essence Howard Gardner argues that he was making two essential claims about multiple intelligences. That: The theory is an account of human cognition in its fullness. The intelligences provided 'a new definition of human nature, cognitively speaking' (Gardner 1999: 44). Human beings are organisms who possess a basic set of intelligences. People have a unique blend of intelligences. Gardner argues that the big challenge facing the deployment of human resources 'is how to best take advantage of the uniqueness conferred on us as a species exhibiting several intelligences' (ibid.: 45). These intelligences, according to Howard Gardner, are amoral - they can be put to constructive or destructive use. The appeal of multiple intelligences to educators Howard Gardner's theory of multiple intelligences has not been readily accepted within academic psychology. However, it has met with a strongly positive response from many educators. It has been embraced by a range of educational theorists and, significantly, applied by teachers and policymakers to the problems of schooling. A number of schools in North America have looked to structure curricula according to the intelligences, and to design classrooms and even whole schools to reflect the understandings that Howard Gardner develops (follow the links below to visit a couple of examples). The theory can also be found in use within pre-school, higher, vocational and adult

education initiatives. This appeal was not, at first, obvious. At first blush, this diagnosis would appear to sound a death knell for formal education. It is hard to teach one intelligence; what if there are seven? It is hard to enough to teach even when anything can be taught; what to do if there are distinct limits and strong constraints on human cognition and learning? (Howard Gardner 1993: xxiii) Howard Gardner responds to his questions by first making the point that psychology does not directly dictate education, 'it merely helps one to understand the conditions within which education takes place'. What is more: Seven kinds of intelligence would allow seven ways to teach, rather than one. And powerful constraints that exist in the mind can be mobilized to introduce a particular concept (or whole system of thinking) in a way that children are most likely to learn it and least likely to distort it. Paradoxically, constraints can be suggestive and ultimately freeing. (op. cit.) Mindy L. Kornhaber (2001: 276), a researcher involved with Project Zero, has identified a number of reasons why teachers and policymakers in North America have responded positively to Howard Gardner's presentation of multiple intelligences. Among these are that: ... the theory validates educators' everyday experience: students think and learn in many different ways. It also provides educators with a conceptual framework for organizing and reflecting on curriculum assessment and pedagogical practices. In turn, this reflection has led many educators to develop new approaches that might better meet the needs of the range of learners in their classrooms. The response to Howard Gardner is paralleled by the adoption of Kolb's model of experiential learning by adult and informal educators. While significant criticism can be made of the formulation (see below) it does provide a useful

set of questions and 'rules of thumb' to help educators to think about their practice. The way in which Howard Gardner's theory of multiple intelligences has been translated into policy and practice has been very varied. Howard Gardner did not, initially, spell out the implications of his theory for educators in any detail. Subsequently, he has looked more closely at what the theory might mean for schooling practice (e. g. in *The Unschooled Mind*, *Intelligence Reframed*, and *The Disciplined Mind*). From this work three particular aspects of Gardner's thinking need noting here as they allow for hope, and an alternative way of thinking, for those educators who feel out of step with the current, dominant product orientation to curriculum and educational policy. The approach entails: A broad vision of education. All seven intelligences are needed to live life well. Teachers, therefore, need to attend to all intelligences, not just the first two that have been their tradition concern. As Kornhaber (2001: 276) has noted it involves educators opting 'for depth over breadth'. Understanding entails taking knowledge gained in one setting and using it in another. 'Students must have extended opportunities to work on a topic' (op. cit.). Developing local and flexible programmes. Howard Gardner's interest in 'deep understanding', performance, exploration and creativity are not easily accommodated within an orientation to the 'delivery' of a detailed curriculum planned outside of the immediate educational context. 'An " MI setting" can be undone if the curriculum is too rigid or if there is but a single form of assessment' (Gardner 1999: 147). In this respect the educational implications of Howard Gardner's work stands in a direct line from the work of John Dewey. Looking to morality. 'We must figure out how intelligence and morality can work

together', Howard Gardner argues, 'to create a world in which a great variety of people will want to live' (Gardner 1999: 4). While there are considerable benefits to developing understanding in relation to the disciplines, something more is needed. Are there additional intelligences? Since Howard Gardner's original listing of the intelligences in *Frames of Mind* (1983) there has been a great deal of discussion as to other possible candidates for inclusion (or candidates for exclusion). Subsequent research and reflection by Howard Gardner and his colleagues has looked to three particular possibilities: a naturalist intelligence, a spiritual intelligence and an existential intelligence. He has concluded that the first of these 'merits addition to the list of the original seven intelligences' (Gardner 1999: 52). Naturalist intelligence enables human beings to recognize, categorize and draw upon certain features of the environment. It 'combines a description of the core ability with a characterization of the role that many cultures value' (ibid.: 48). The case for inclusion of naturalist intelligence appears pretty straightforward, the position with regard to spiritual intelligence is far more complex. According to Howard Gardner (1999: 59) there are problems, for example, around the 'content' of spiritual intelligence, its privileged but unsubstantiated claims with regard to truth value, 'and the need for it to be partially identified through its effect on other people'. As a result: It seems more responsible to carve out that area of spirituality closest 'in spirit' to the other intelligences and then, in the sympathetic manner applied to naturalist intelligence, ascertain how this candidate intelligence fares. In doing so, I think it best to put aside the term spiritual, with its manifest and problematic connotations, and to speak instead of an intelligence that explores the

nature of existence in its multifarious guises. Thus, an explicit concern with spiritual or religious matters would be one variety - often the most important variety - of an existential intelligence. Existential intelligence, a concern with 'ultimate issues', is, thus, the next possibility that Howard Gardner considers - and he argues that it 'scores reasonably well on the criteria' (ibid.: 64). However, empirical evidence is sparse - and although a ninth intelligence might be attractive, Howard Gardner is not disposed to add it to the list. 'I find the phenomenon perplexing enough and the distance from the other intelligences vast enough to dictate prudence - at least for now' (ibid.: 66). The final, and obvious, candidate for inclusion in Howard Gardner's list is moral intelligence. In his exploration, he begins by asking whether it is possible to delineate the 'moral domain'. He suggests that it is difficult to come to any consensual definition, but argues that it is possible to come to an understanding that takes exploration forward. Central to a moral domain, Howard Gardner suggests, 'is a concern with those rules, behaviours and attitudes that govern the sanctity of life - in particular, the sanctity of human life and, in many cases, the sanctity of any other living creatures and the world they inhabit' (ibid.: 70). If we accept the existence of a moral realm is it then possible to speak of moral intelligence? If it 'connotes the adoption of any specific moral code' then Howard Gardner does not find the term moral intelligence acceptable (ibid.: 75). Furthermore, he argues, researchers and writers have not as yet 'captured the essence of the moral domain as an instance of human intelligence' (ibid.: 76). As I construe it, the central component in the moral realm or domain is a sense of personal agency and personal stake, a realization that one has an irreducible role with respect to

other people and that one's behaviour towards others must reflect the results of contextualized analysis and the exercise of one's will.... The fulfillment of key roles certainly requires a range of human intelligences - including personal, linguistic, logical and perhaps existential - but it is fundamentally a statement about the kind of person that has developed to be. It is not, in itself, an intelligence. 'Morality' is then properly a statement about personality, individuality, will, character - and, in the happiest cases, about the highest realization of human nature. (ibid.: 77) So it is, that Howard Gardner has added an eighth intelligence - naturalist intelligence - to his list. He has also opened the door to another possibility - especially that of existential intelligence - but the court is out on that one. Howard Gardner's multiple intelligences - some issues and problems There are various criticisms of, and problems around, Howard Gardner's conceptualization of multiple intelligences. Indeed, Gardner himself has listed some of the main issues and his responses (1993: xxiii-xxvii; 1999: 79-114). Here, I want to focus on three key questions that have been raised in debates. (There are plenty of other questions around - but these would seem to be the most persistent): Are the criteria Howard Gardner employs adequate? John White (1997) has argued that there are significant issues around the criteria that Howard Gardner employs. There are questions around the individual criteria, for example, do all intelligences involve symbol systems; how the criteria to be applied; and why these particular criteria are relevant. In respect of the last, and fundamental question, White states that he has not been able to find any answer in Gardner's writings (ibid.: 19). Indeed, Howard Gardner himself has admitted that there is an element of subjective judgement

involved. Does Howard Gardner's conceptualization of intelligence hold together? For those researchers and scholars who have traditionally viewed intelligence as, effectively, what is measured by intelligence tests - Howard Gardner's work will always be problematic. They can still point to a substantial tradition of research that demonstrates correlation between different abilities and argue for the existence of a general intelligence factor. Howard Gardner (1993: xxiv) disputes much of the evidence and argues that it is not possible, as yet, to know how far intelligences actually correlate. More recent developments in thinking around intelligence such as Robert Sternberg's (1985, 1996) advancement of a 'triarchic model' have shared Gardner's dislike of such standard intelligence theory. However, in contrast to Howard Gardner, Robert Sternberg does not look strongly at the particular material that the person is processing. Instead he looks to what he calls the componential, experiential and contextual facets of intelligence. A further set of criticisms centre around the specific intelligences that Howard Gardner identified. For example, it can be argued that musical intelligence and bodily-kinesthetic intelligence are better approached as talents (they do not normally need to adapt to life demands). Is there sufficient empirical evidence to support Howard Gardner's conceptualization? A common criticism made of Howard Gardner's work is that his theories derive rather more strongly from his own intuitions and reasoning than from a comprehensive and full grounding in empirical research. For the moment there is not a properly worked-through set of tests to identify and measure the different intelligences. I once thought it possible to create a set of tests of each intelligence - an intelligence-fair version to be sure - and then simply

to determine the correlation between the scores on the several tests. I now believe that this can only be accomplished if someone developed several measures for each intelligence and then made sure that people were comfortable in dealing with the materials and methods used to measure each intelligence. (Gardner 1999: 98) Howard Gardner himself has not pursued this approach because of a more general worry with such testing - that it leads to labeling and stigmatization. It can be argued that research around the functioning of the brain generally continues to support the notion of multiple intelligence (although not necessarily the specifics of Howard Gardner's theory). There are further questions around the notion of selfhood that Howard Gardner employs - something that he himself has come to recognize. In the early 1990s he began to look to the notion of distributed cognition as providing a better way of approaching the area than focusing on what goes on in the mind of a single individual (Hatch and Gardner 1993) (see the discussion of social/situational orientations to learning). Conclusion While there may be some significant questions and issues around Howard Gardner's notion of multiple intelligences, it still has had utility in education. It has helped a significant number of educators to question their work and to encourage them to look beyond the narrow confines of the dominant discourses of skilling, curriculum, and testing. For example, Mindy Kornhaber and her colleagues at the Project SUMIT (Schools Using Multiple Intelligences Theory) have examined the performance of a number of schools and concluded that there have been significant gains in respect of SATs scores, parental participation, and discipline (with the schools themselves attributing this to MI theory). To the extent that Howard Gardner's multiple intelligences

theory has helped educators to reflect on their practice, and given them a basis to broaden their focus and to attend to what might assist people to live their lives well, then it has to be judged a useful addition. Project SUMIT (2000) uses the metaphor of Compass Points - 'routes that educators using the theory have taken and which appear to benefit students'. They have identified the following markers that characterize schools with some success in implementing practices that attend to multiple intelligences theory.

Culture: support for diverse learners and hard work. Acting on a value system which maintains that diverse students can learn and succeed, that learning is exciting, and that hard work by teachers is necessary. Readiness: awareness-building for implementing MI. Building staff awareness of MI and of the different ways that students learn. Tool: MI is a means to foster high quality work. Using MI as a tool to promote high quality student work rather than using the theory as an end in and of itself. Collaboration: informal and formal exchanges. Sharing ideas and constructive suggestions by the staff in formal and informal exchanges. Choice: meaningful curriculum and assessment options. Embedding curriculum and assessment in activities that are valued both by students and the wider culture. Arts. Employing the arts to develop children's skills and understanding within and across disciplines. Informal educators can usefully look at this listing in respect of their projects and agencies. The multiple intelligences themselves also provide a good focus for reflection. Arguably, informal educators have traditionally been concerned with the domains of the interpersonal and the intrapersonal, with a sprinkling of the intelligences that Howard Gardner identifies with the arts. Looking to naturalist linguistic and logical-mathematical intelligences could

help enhance their practice. Further reading and references The main Howard Gardner writings on multiple intelligences are as follows: Gardner, Howard (1983; 1993) *Frames of Mind: The theory of multiple intelligences*, New York: Basic Books. The second edition was published in Britain by Fontana Press. 466 + xxix pages. (All references in this article refer to this second, 10th Anniversary, edition). A major addition to the literature of cognitive psychology being the first full length explication of multiple intelligences. Gardner, Howard (1989) *To Open Minds: Chinese clues to the dilemma of contemporary education*, New York: Basic Books. This book includes a significant amount of material on Gardner's early life. Gardner, H. (1991) *The Unschooled Mind: How children think and how schools should teach*, New York: Basic Books. Gardner, Howard (1999) *Intelligence Reframed. Multiple intelligences for the 21st century*, New York: Basic Books. 292 + x pages. Useful review of Gardner's theory and discussion of issues and additions. Gardner, Howard (1999) *The Disciplined Mind: Beyond Facts And Standardized Tests, The K-12 Education That Every Child Deserves*, New York: Simon and Schuster (and New York: Penguin Putnam). References Brualdi, A, C. (1996) 'Multiple Intelligences: Gardner's Theory. ERIC Digest', Eric Digests, http://www.ed.gov/databases/ERIC_Digests/ed410226.html Bruner, J (1960) *The Process of Education*, Cambridge, Mass.: Harvard University Press. Gardner, H. (1975) *The Shattered Mind*, New York: Knopf. Gardner, H., Csikszentmihalyi, M. and Damon, W. (2001) *Good Work: Where Excellence and Ethics Meet*, New York: Basic Books. Gardner, H., & Hatch, T. (1989). Multiple intelligences go to school: Educational implications of the theory of multiple intelligences. *Educational Researcher*, 18(8), 4-9. T. Hatch

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