Understanding as the Key Objective of Education

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In his book *The Disciplined Mind*[1], Howard Gardner presents an interesting and challenging view on what should be central to the theory and practice of formal education in primary and secondary schools. The key elements of his theory are: the major objective of developing understanding; the need to include the basic value areas of truth, beauty, and goodness; and the recognition of diverse forms of intelligence in each learner.

He believes that decisions on detail should be left to each educational community. His position here is unclear. Does he mean local communities within a national society? This is what seems to be the case in some contexts. However, by 'community' he also refers to a particular cultural tradition. The schools should present and investigate its account of truth, beauty, and morality. However, they are to recognize that what is upheld in these areas has varied over time in every tradition, and should draw attention to the contemporary differences that exist among cultures.

His position may seem that of a relativist. However, I think he takes the view that, to a large extent, we cannot be definitive on questions of truth, beauty, and goodness. Even though we regard the content of our own cultural tradition as more defensible than others, we should learn about the different beliefs and practices of other traditions and how to live tolerantly with them. At a more immediate level, this applies to the diversity of beliefs and practices within a single pluralist society.

While rejecting the view that there is one correct ideal of education, Gardner claims that there are features crucial for any sound educational practice. Centrally, it is concerned with developing an understanding of the content and methods of the disciplines of knowledge in order to promote lives that are both personally meaningful and civically responsible. To this end, he notes the general importance of historical knowledge, and an awareness of the timeless aspects of human life along with changing contemporary conditions.

In the introduction to his educational ideas, Gardner claims to be in the tradition of John Dewey. The latter, he asserts, really

combined what came to be called a 'progressive' approach with the achievement of traditional educational objectives. He quotes with approval the view expressed by Dewey that 'the organized subject matter of the adult and the specialist ... represents the goal towards which education should continuously move'.[2] However, Dewey's emphasis on problem solving as central to the practice of education and the role that a feeling of resolution plays in his account of the complete act of thought do not seem to be reflected in Gardner's theory.

Gardner expresses his opposition to anything like E. D. Hirsch's account of 'cultural literacy'.[3] Whether one agrees with Hirsch or not, his objective in setting out the range of background knowledge that everyone needed for informed participation in the discourse of a national culture (in his case, the United States) was misunderstood in application to the practice of education. He certainly did not intend his list to be the blueprint for a comprehensive curriculum. Hirsch states that what he means by 'cultural literacy' is a 'limited educational goal'.[4] It concerns 'the background knowledge necessary for functional literacy and effective national communication'. Still, as Gardner points out, a bare list of items that we should know leads easily to a superficial, even anti-intellectual, practice of teaching and learning. While I would not accept Gardner's assertion that questions are more important than answers, I would agree with him that the acquiring of knowledge should come in the context of systematic, disciplined learning.

Before setting out on the development of his account of sound educational theory and practice, Gardner draws attention to the main underlying theory. Based on his work in neurology and cognitive psychology, he claims that humans have eight (possibly nine) separate forms of intelligence. We differ from one another in our 'profiles of intelligence'.[5] He stresses that this does not entail a rejection of rigorous standards. What it requires is the recognition of a much broader range of such standards than those related to linguistic and logical skills.

Although the following observation may not have any significant bearing on the educational theory Gardner defends, I think it would be preferable to argue for a number of diverse dimensions of what we recognize as the general mental property of intelligence than to refer, as Gardner does, to 'multiple intelligences'.

As a background to developing his own position, Gardner refers to various conflicting views of the school's role. He notes that, in all times and places, formal education has had two broad objectives: to shape the young for adult roles and to transmit a culture's values. As he points out, in recent times, the increasing rate of change in work and other social

roles and in the domain of values is placing 'considerable pressure on the institutions of education'.[6] Also, in many contemporary social orders, schools have tended to become 'decontextualised' (a term he borrows from postmodernism). Wherever they happen to be, their main objectives are to develop literacy and numeracy and knowledge of the intellectual disciplines. Despite this trend, I think it can accurately be claimed that, from one culture to another, schools still reflect important differences in beliefs and values.

On the proper role of the school, Gardner draws attention to the following conflicting positions: the study of key ideas in depth versus the broad range of knowledge that makes up 'cultural literacy'; utilitarian outcomes versus intellectual (or general human) development for its own sake; a common curriculum versus one that is adapted (or perhaps even individualized) to meet different needs, interests, abilities; the provision of formal education by a variety of private agents versus a system that is a direct public responsibility; an approach to educating that ignores or fuses disciplines (such as problem-based or theme-based) versus one aimed at mastery of the distinct disciplines of knowledge; an educational process that emphasizes assessment versus one that gives it a subordinate, instrumental role; adherence to high universal standards versus their adaptation to particular conditions; emphasis on acquiring technological skills versus broad human development.

Gardner regards his own position on these dichotomies as a mixture of what he loosely calls progressive and traditional views. He believes that education should emphasize depth over breadth of learning, should be student-centred and individualized, and under public control. But he also believes that it should be focused on the disciplines, emphasize the value of knowledge for its own sake, apply high standards in regular assessment, and be sensitive to the potentially serious negative effects of the Internet and other high technology as well as to their benefits.

In relation to what Gardner defends as the proper role of formal education, the most serious deficiency he sees in contemporary practice is its overemphasis on the learning of content and methods relating to the value domain of the true to the neglect of the other basic value domains of the beautiful and the good.

Before expounding his own theory, Gardner draws attention to dramatic changes that have occurred in the century just past in contrast to changes in the practice of schooling. He emphasizes the development of the various forms of high technology and the 'globalizing' trend in economic activities. He believes that the former, particularly advanced

media of communication, will be 'a dominating (if sometimes unintentional) agency of education throughout the world'.[7] All kinds of cultures will be exposed to one another. A serious challenge for schools in a Western culture is whether they will simply endorse or critically examine those of its values and practices that are rejected by other cultures.

In relation to changes in the economy, schools cannot be neutral on the question of whether they are to be mainly instruments of the economic order or take a broader role that upholds values outside (and sometimes in competition with) those of the economy. This problem is, perhaps, eased a little by what Gardner had noted earlier: the belief of some corporate executives that a classical liberal education is the best preparation for material success in a rapidly changing world.

Gardner makes some dubious claims about the 'psychological insights' people now have compared with earlier times. However, he admits that these have not promoted a general concern for higher quality education and the importance of lifelong learning. The discouraging reality is 'the flocking of most individuals to the most mindless forms of entertainment'.[8] He also makes the curious claim that 'the Internet enables people to design their own portrayal of themselves—indeed, to change it at will'.[9] I think it can reasonably be held that this ability and its exercise have been a feature of human life from its beginning. It is frequently a form of deception, either of oneself or others.

In his references to advanced computer technology and education, Gardner expresses uncritical enthusiasm. Obviously, as he points out, these advances can make a significant contribution to the conduct of more effective distance education. But they cannot substitute for the educational benefits that come from personal interaction with teachers and fellow students in learning activities, and the informal educational experience of being a member of a community such as a school or university.

More directly related to the practice of formal education have been the advances made in many scholarly disciplines over the past hundred years or so—and the increasing importance of multidisciplinary inquiry. Also, the development of the Internet and related computer technology has added another form of literacy to the traditional three. A critical challenge for formal education is to keep up with the advances in the disciplines and to develop the skills of computer literacy. Gardner's view is that secondary schools (and perhaps undergraduate programs) should focus on individual disciplines, even though much advanced scholarship depends on interdisciplinary inquiry.

On recent Western theories of knowledge Gardner refers briefly to postmodernism and what he calls 'multiculturalism' (a culturally pluralist approach to what counts as knowledge). He is generally critical of the postmodernist position. Against it, he makes the following sound basic point: 'One cannot take a position that stresses the relativity of all knowledge and at the same time claim the right to be listened to and taken seriously'.[10] While Gardner recognizes criteria for distinguishing more defensible claims about truth, beauty, and goodness, he concedes a little to the postmodernist position: 'a curriculum grounded in the traditional verities should not claim to be definitive'.[11]

On 'multiculturalism', Gardner agrees that a single cultural canon is misguided. An eclectic approach in education is desirable, especially in a society of diverse cultural backgrounds. The criteria he supports for what should be included in education are : 'the best that has been thought and known in the world' (using Arnold's words) and information that is as accurate as possible. An obvious question here is on what grounds we are to identify the best that has been thought and known.

Gardner is confident that sound guidance for the reforms much needed in our current practice of formal education can come from recent work in psychology, neurology, biology (of the brain), and anthropology. Given his belief that, for a sound education, there needs to be systematic study of the three core values of the true, the beautiful, and the good, it is surprising that he makes no mention of philosophy as one of the key perspectives for the development of educational theory. His views on postmodernism and 'multiculturalism' come within the philosophical field of epistemology.

Although Gardner's theory of education draws heavily on scientific knowledge, he stresses that such knowledge, while important in shaping educational processes, is not the final arbiter of the goals and values that these processes serve. Decisions on goals and values 'are properly made by the larger, informed community'.[12] One wonders: on what grounds are these decisions made?

During the first half of the twentieth century, behaviourism and the measurement of genetic intelligence by tests that yielded a standardized intelligence quotient score exercised a strong influence on education. Although the two approaches were radically at odds as theories, they could be applied without friction in the practice of teaching and learning. From the mid-1950s, these theories were challenged, and largely displaced, by cognitive psychology, which focuses on the capacity of the human brain to form mental representations.

Among its versions, Gardner mentions Piaget's developmental theory, Chomsky's account of language in terms of a particular innate cognitive

system, and his own claim that each human being possesses eight, and possibly nine, separate forms of intelligence. The forms he identifies are: linguistic, logical-mathematical, spatial, musical, bodily-kinaesthetic, naturalistic, intrapersonal, interpersonal—and, perhaps, existential (that is, the ability to raise questions about ultimate reality). They are not possessed at the same strength within, or between, individuals; and the pattern within any individual may change over time. Perhaps it makes little practical difference, but I think it would be preferable to refer to intelligence as a general capacity of the mind-brain that can be exercised in a variety of ways rather than to postulate a number of diverse intelligences in each person. In any case, the key conclusion that Gardner draws for schooling is that it 'must be individualized and personalized'.[13]

He refers to the obvious fact that in early childhood we form both accurate and inaccurate representations, and that the latter often endure. Of course, formal education should do everything possible to correct the latter. However, prejudices and the like are frequently the reflections of very powerful communal influences on the members of a society. In a society that is convinced of its cultural superiority, it would be almost impossible for education to correct such mistaken beliefs and so on in individuals. They are not acquired primarily by the exercise of each individual's intelligence.

I do not think that any serious educator would question Gardner's claim about the desirability of developing higher cognitive functions. He mentions the role that computer technology can play in achieving this objective. However, I believe caution is needed in this regard. To avoid producing higher order results through a mechanical process, attention should be given to developing some understanding of how the technological instruments work. The point that Gardner makes about the importance in the educational process of personality, motivation, and emotion as well as cognition is obvious, but often neglected.

Although he does not examine the issues involved, he holds that the mind emerges through the interaction of brain and culture. To the latter we should add the interaction with other living beings and the physical environment. He correctly points out that no amount of brain science can account for the values one holds, and hence is an inadequate grounding for education, which is deeply shaped by values. These play a significant role in decisions on what, how, why to teach and learn. Cultural studies are thus crucial for the theory and practice of education. This is the context in which he might have mentioned the important contribution that philosophical inquiry can make.

Given his caution on the scope of brain science, Gardner argues that it does, nevertheless, have very important consequences for sound educational practice. Among them, he lists the following: 'the tremendous importance of early experience'; 'the importance of action and activity'; 'the crucial roles played by emotional coding'; 'the specificity of human abilities and talents'.[14] The last relates directly to Gardner's theory of multiple intelligences.

In concluding his discussion of the relevance of brain science to education, Gardner makes a curious claim about the relevance that genetic and environmental factors have to educational practice. His view is that the former is a given about which educational practice can do nothing; its focus is on the latter. But surely the recognition of genetic capacities for significant learning (and their variations among individuals) has a key role in the practice of education. The flowering of genetic capacities to their full potential depends, at least in many cases, on the influence of an appropriate education.

Gardner's final background comments refer to the influence that cultural contexts have on the quality of formal education. (This is not consistent with what he has said about the trend to 'decontextualized' schooling.) One of the main claims he makes is that the awareness of cultural differences in the process of learning has changed the model of related psychological inquiry from that of physics to that of anthropology. Learning is now seen as *situated* (as occurring in the family, the school, and other sociocultural contexts). Knowledge is seen as *distributed*. That is, rather than simply being within each individual's perspective, it involves interaction among people and with various technical resources. The environment of learning is crucial for its quality.

I think it can fairly be said that the foregoing claims are what commonsense experience would regard as obvious. If psychologists have only recently been coming to these insights, it shows how ensnared they were in the 'physics' model of inquiry.

Gardner raises an important issue in noting the problem for moral education in a secular society. It would be more precise to relate the problem to upholding the tolerance and respect required by a pluralist culture. Common schools are certainly constrained in this context. However, the constraints are not as severe as Gardner assumes. The pluralist commitment itself supports a range of common moral values. The values should be reflected in the institutional features of common schools and in their formal moral education. Moreover, all schools in a pluralist society have the responsibility to develop the moral attitudes of tolerance and respect on which the conduct of civilized life in such a society depends. In regard to the common values, Gardner does not

go into the question of whether schools (common and private) should simply reflect those that are prevailing or try to exercise a reforming role. (For common schools, this would be restricted, of course, to encouraging the moral values that should prevail in any sound pluralist democracy.)

At the end of his background comments, Gardner stresses that, for a desirable theory and practice of education, the perspectives of cognitive science and cultural anthropology 'are equally important, indispensable, and cumulative'.[15] This is a defensible position to take. But it needs to be recognized that there are other radically important perspectives (such as philosophy, history, sociology) on which an adequate defence of educational theory and practice depends.

The position Gardner wishes to defend is that primary and secondary schooling should be centrally concerned with education for understanding. To illustrate what this objective clearly is not he refers to the University of Phoenix. It has over 40,000 students enrolled, but there is no campus or library or permanent faculty. Those who teach are practitioners in their field. Lectures and seminars take place in the afternoon and evening. Much of the work is done on a home computer. The education provided is an instrument for getting a better job, being able to speak more effectively at meetings, and the like. There is no intellectual interest in the values of truth, beauty, and goodness. 'Ideas have value only if they can be put to immediate commercial use ... . The Phoenix mission is completely utilitarian'.[16] I think that what Gardner here describes would be regarded by many educational theorists as not being any form of education at all, but one of training.

What he advocates is the development in students of an understanding of the main disciplined modes of thinking. He refers explicitly to science, mathematics, the arts, and history. Given the emphasis in one of his examples on good and evil, he should have included ethics (or moral theory). Students need not try to study every aspect of the disciplines. The objective is that they 'should probe with sufficient depth *a manageable set of example*'[17] in order to see how one thinks and acts as a scientist, historian and so on. From an educational point of view, one could agree that this is desirable. However, it does not go far enough. Students should also come to acquire a critical knowledge of the significant content and basic modes of thought in the various disciplines they study. Gardner might have strengthened his position if he had given some attention to relatively recent educational theorists on the teaching of the disciplines such as Richard Peters, Paul Hirst, Israel Scheffler, Jerome Bruner[18]. None of these gains even a mention.

Gardner correctly notes the tendency for teachers to oversimplify what is to be learnt in the name of disciplines with the result that students

acquire a distorted or, at least, a shallow understanding. To avoid this outcome, teachers should work on a curriculum that explores a limited number of topics in depth. Gardner discusses four approaches to learning with understanding.

(1) There are certain institutional contexts, such as an apprenticeship or a 'hands-on' museum, that encourage efforts at graduated problem-solving with help from those who have mastered the problems and related knowledge. I think it should be noted that those who are 'masters' of the problems in these contexts do not necessarily *understand* why a certain procedure is effective and so on.

(2) The challenging of students' erroneous view by providing counterevidence.

(3) Contexts of learning in which the main emphasis is on 'performances of understanding'. Examples of the latter include the application of one's knowledge to a variety of new problems, observing how those who are more proficient engage in the various intellectual activities to which one is being introduced. For this approach to be effective, teachers must set out a relatively small number of 'understanding goals'; identify 'generative topics' and raise 'essential questions' in the introductory lessons; make sure that students know by what criteria they are to be assessed in an ongoing way and why the criteria are relevant.

(4) The recognition of multiple entry points to the acquisition of understanding and of diversity within its attainment. (Here Gardner is applying his account of multiple intelligences.)

These approaches, particularly the fourth, raise what must surely be the basic question about the theory and practice of education they are intended to promote: with what meaning is its key concept 'understanding' being used? Given the link between understanding and multiple intelligences, it would seem that for any given object, action and so on there must be many justifiable understandings. How far can we go in applying objective criteria to what counts as understanding? So, we face the basic question of what 'understanding' means. I shall return to this question after referring to Gardner's account of a curriculum for the promotion of understanding grounded in the knowledge and methods of intellectual disciplines.

He correctly notes that any curriculum must be selective. The process of selection in his approach centres on the three basic values of the true, the beautiful, and the good. For the development of an adequate understanding of these values (and their opposites) he proposes three topics for systematic, cumulative study from the perspectives of relevant intellectual disciplines: Darwin's theory of evolution and the experiences

that led to its formulation (the true, science); *The Marriage of Figaro*, music by Mozart and libretto by Lorenzo da Ponte (the beautiful, aesthetics or theory of art); the Holocaust carried out by the Nazis with the objective of eliminating European Jews (fundamental moral questions about good and evil, history).

Gardner notes that most questions can be approached from a variety of disciplines. Also, although the main focus of a discipline is on one of the three basic values, most have relevance for all three. History, for example, seeks to develop a defensible interpretation and explanation of what happened in the past. At the same time, it throws light on moral issues relevant to contemporary life.

A serious obscurity in Gardner's discussion of the three examples mentioned above concerns the role he intends them to play in relation to designing and implementing a school curriculum. On page 158 he seems to be claiming that the three topics chosen make up the whole curriculum of formal education (once students have acquired the basic skills of literacy and numeracy). Surely, what he offers is an illustration of how some disciplines might be satisfactorily treated in the process of education. It is obvious that no educational program can cover every discipline, much less the broad range of topics in each. But it does need to go well beyond a single item selected from a few. The objective of a sound understanding of the values of truth, beauty, and goodness cannot be adequately achieved in schooling on the narrow basis Gardner proposes.

Gardner's theory of multiple intelligences plays the key role in his view on how understanding can be enhanced in the practice of education. He suggests three main ways in which this occurs.

(1) Any topic can be approached by the variety of ways that correspond to the diverse forms of intelligence. As a result, it is matched to the differences among students in how their interest is engaged in a subject.

(2) Attention to the multiple intelligences provides a basis for powerful analysis that helps make clear both similarities and differences among topics.

(3) On the basis of the multiple intelligences, the core ideas of a topic can be represented in a variety of ways.

Applying his theory of eight (possibly nine) 'intelligences', Gardner suggests 'seven powerful entry points to diverse concepts'.[19] (It is not clear why there are not eight or nine.) These are: narrative, numerical, logical, existential (for example, questions about life, death, love, hate), aesthetic, 'hands-on' (some activity relevant to understanding the topic), interpersonal (activities involving more than one learner). Gardner points out that the effectiveness of these approaches varies among individuals

working on the same topic, and for the same individual in relation to different topics. They are intended to engage interest as a basis for understanding. It should also be noted that, on his theory, there will be variable effectiveness in their use by teachers. Like his or her students, each teacher has a particular mix of intelligence.

Gardner stresses the importance of the use of appropriate analogies, metaphors, graphs, and so on ('multiple representations'), by teachers in helping students to develop understanding. As the latter advance, they should be encouraged to devise appropriate representations themselves.

Whether or not one accepts his theory of multiple intelligences, the use of a variety of 'entry points' and 'multiple approaches' are sound practices in teaching and learning aimed at developing the understanding of explanations, interpretations, evaluations and so on.

The study of the three basic curriculum topics proposed by Gardner is intended to develop students' understanding of the broad value areas of the true, the beautiful, and the good—and their opposites. He recognizes the danger that this objective may be obscured as attention is focused on the details of each topic. Its avoidance depends on effective curriculum planning and institutional arrangements. Before proceeding to suggestions on what this involves, he makes the curious claim that the questions and answers of individuals about the true, the beautiful, and the good (and their interconnections) are more important than those of a society as a whole. The complex relationship between the beliefs of an individual and the sociocultural order to which he or she belongs makes this ranking far too simple.

Gardner makes a considerable number of sound, but obvious, comments on the planning of the curriculum over the course of schooling. Naturally, he would prefer the curriculum he favours to be on a national scale but, given serious disagreements, he accepts a combination of guidelines for both large-scale and local approaches. Among the main points he makes are the following:

- The essential questions are common across schools, but the details of treatment are determined by local initiative.
- In the early years, students should become sufficiently literate and numerate to participate in the study of disciplines. In the later years, they should develop some mastery of disciplines and then work at the 'essential questions' (about the true, the beautiful, and the good in the examples he proposes).
- Scientific thinking, artistic interpretation, and historical examples are essential for exploring the questions that humans find basic. (There is no reference to philosophy.)
- The teaching of disciplines should be done, not as an

apprenticeship for advanced professional work in a discipline, but as a basis for students' future personal life as adults, citizens, workers and so on.

- To accommodate diversity, Gardner suggests several 'pathways'. It is curious that, despite the argument of his book, the 'understanding pathway' is simply one on the list. It is the one that is advanced by Socrates and (apparently in all humility) by Gardner. I think it can fairly be claimed that serious teachers who took any of the other 'pathways' would have the development of understanding as one of their key objectives.

Gardner claims that, given differences among individual minds, we represent what we know in idiosyncratic ways. Taken literally, this would make it impossible to teach for understanding as a basic objective of education. Perhaps it would be accurate to say that the objective is a common defensible understanding, with some varying emphases from one individual to another.

Gardner concludes with two important points on the achievement of understanding in the domains of the true, the beautiful, and the good. We need to connect diverse areas of understanding in each (for example, knowing what is good and being good), and we should know (at least indirectly) and emulate people whose lives exhibit a high level of commitment to the values of truth, beauty, and goodness.

Although the entire book addresses the topic of education for understanding, Gardner gives no systematic attention to what is meant by 'understanding'. He notes that concepts, skills, knowledge are *understood* to the extent that they can be applied appropriately in a new situation. This contrasts with the memorizing of information with no idea of how to apply it beyond the context in which it is learnt. Given that he relates approaches to understanding to his claim about multiple intelligences, this is an added reason for expecting some careful examination of what it involves. Over relatively recent decades there has been no shortage of writings by philosophers and educational theorists about understanding on which Gardner might have drawn.[20] None of them even scores a reference.

Jane Martin's *Explaining, Understanding, and Teaching*[21] provides a sound introduction to the complex features of understanding and how they relate to the objectives of teaching and understanding. The points to which I shall briefly refer on this topic are ones on which I think she would agree. In using the term 'understanding' we need to distinguish knowing about something and seeing another individual's or group's reasons, motives etc. with empathy or even sympathy. The first refers to both 'knowing that' (for example, being able to explain changes

in natural phenomena) and 'knowing how' (for example, being able to use a computer to enter a website). However, it should be stressed that neither of these kinds of performance is a sufficient condition for understanding. For the first, we need to be able to see at least something of why the phenomena involved would be, say, causally related. For the second, we need to know something of why the procedures followed produce the desired outcome.

In *The Concept of Mind*,[22] Gilbert Ryle treated understanding as always being primarily a form of knowing how. But, against this, we can know how to do something without any knowledge of why or how the process works, and we can explain, see the purpose etc. of some activity without knowing how to engage in it. For example, a person with no competence in a particular sport may understand why certain moves are effective, while someone very competent at making the moves may not understand why they work so well. Of course, if you understand that A is caused by B, you also know how to explain A's occurrence.

The diverse ways in which a performance can be understood is well illustrated by Martin in the example of a ritual dance.[23] It can be understood with reference to how those participating are aware of what they are doing. But it can also be understood in terms of the role it plays in the life of a society (anthropological); the pattern of movements (choreographical); how the ritual originated and developed (historical); what responses are made to various stimuli (psychological).

As this example shows, any explanation reflects a theoretical perspective and, therefore, cannot claim to be complete. In any case, there is always the possibility of further questions leading to deeper levels of understanding. We claim to understand an occurrence X by reference to the causal influence of A. Then we may come to understand what causes A to have this influence, and so on.

The example of the ritual dance also illustrates an important general difference in types of explanation. Many emphasize external connections, such as causal relationships. Others focus on internal structure, how the parts of an object are related to one another. The choreographical account of the ritual dance is of this kind; except for the first (to which I shall refer shortly), the others involve a variety of external connections. Martin also makes the basic point that 'we never understand a thing per se; rather we understand it under some description'.[24] This is clear in the various perspectives that are taken in relation to the ritual dance.

On the relationship of 'knowing that' and 'knowing how' to understanding, I would claim the following. Understanding always involves 'knowing that', although the latter needs to go beyond simply knowing that, say, X causes Y. We at least need to see or appreciate what

it is about X and Y that makes this relationship intelligible. Apart from the 'know how' involved in the activities (such as explaining and interpreting) that directly express understanding, knowing how to do something does not necessarily involve understanding. For example, a doctor may identify the cause of an illness and prescribe an effective treatment without understanding how the illness is caused or cured. The acquisition of at least some understanding (of seeing why) is a crucial feature that distinguishes education from training.

A different form of understanding, given considerable attention in the past century, is usually referred to as *Verstehen* (the German word for 'understanding'). In the example of the ritual dance, it refers to the perception that those engaged in the dance have of what they are doing. It is often called 'empathetic understanding' in that it accounts for what someone is doing in terms of how that person perceives what he or she is doing. Advocates have claimed that it has special relevance in the understanding of human behaviour. Some philosophers (such as William Dray[25]) have argued that it is the key form of explanation and understanding in relation to human behaviour and thus of historical inquiry.

Dray's reference to *Verstehen* as rational understanding is misleading. No doubt, it is part of the rational understanding of human action to know the agent's reasons for acting, motives, way of seeing a situation and so on (for example, how Hitler saw his role in Nazi Germany). But an accurate understanding of this kind often involves an explanation of an agent's mistaken perception of a situation or self-delusion as to his or her motives. Also, there are other forms of rational understanding that apply to human actions. Although advocates of *Verstehen* stress empathy, its exercise can easily slip into the other sense of 'understanding' as 'being sympathetic towards'.[26]

Verstehen is not mentioned by Gardner. Yet it does raise important questions for the promotion of understanding in the practice of education. Learning to play a musical instrument is neither necessary nor sufficient for understanding (or appreciating) a piece of music. However, as Martin points out, such a practical skill and other activities (for example, moving rhythmically) can help students to understand and appreciate a musical work. (An incidental point to note here is that we can come to an understanding of, say, a musical composition without being able to appreciate it—and vice versa. This is also a matter not considered by Gardner.)

While Gardner refers to important issues in educational theory and makes interesting suggestions for practice, his theory entails a daunting complexity in the practice of education that he does not

address. In any classroom, the teacher and every student are exercising, according to his theory, a varying combination of eight (or, perhaps, nine) intelligences, which also vary in strength among individuals. The objective is to promote understanding. But, as I have noted, the latter takes a variety of defensible forms (as well as degrees of completeness). It is unrealistic to suppose that a teacher could accommodate all these variations of intelligence and understanding with a group of students.

What can be expected is that the content of the curriculum would include the main perspectives of understanding and that the process of teaching and learning would engage and develop the exercise of intelligence, imagination, emotional response, and physical activity on which an accurate attainment of these perspectives and their application depend. This process can be expected to take *reasonable* account of the variations among individuals in their capacities for acquiring different kinds and levels of understanding.

NOTES

1. Howard Gardner, *The Disciplined Mind*, New York: Simon & Schuster, 1999.
2. *Ibid.*, p.23. The quotation is from John Dewey, *Experience and Education*, New York: Macmillan, 1938, p.103.
3. Gardner, *op. cit.*, p.24.
4. E. D. Hirsch, Jr., *Cultural Literacy*, Melbourne: Bantam/Schwartz, 1988, p.xiii.
5. Gardner, *op. cit.*, pp.23–25.
6. *Ibid.*, p.28.
7. *Ibid.*, p.50.
8. *Ibid.*, p.52.
9. *Ibid.*, p.54.
10. *Ibid.*, p.56.
11. *Ibid.*, p.57.
12. *Ibid.*, p.61.
13. *Ibid.*, p.72.
14. *Ibid.*, pp.81–82.
15. *Ibid.*, p.113.
16. *Ibid.*, pp.116, 117.
17. *Ibid.*, p.118.
18. It is particularly surprising that no reference is made to Bruner's emphasis on teaching the structure of the disciplines (the concepts and theories in each that promote the widest understanding, and their key methods of inquiry). I have discussed Bruner's theory in J. V. D'Cruz and Wilma Hannah (eds.), *Perceptions of Excellence*, Melbourne: The Polding Press, 1979, Ch. 2.
19. Gardner, *op. cit.*, p.188.
20. Gardner might have referred to the views of philosophers such as A. N. Whitehead and Gilbert Ryle, and to educational theorists such as Paul

Hirst, Philip Phoenix, Jane R. Martin.

21. Jane R. Martin, *Explaining, Understanding, and Teaching,* New York: McGraw-Hill, 1970.
22. Gilbert Ryle, *The Concept of Mind,* London: Hutchinson, 1949.
23. Martin, *op. cit.,* p.149.
24. *Ibid.,* p.155.
25. William Dray, *Laws and Explanations in History,* London: Oxford University Press, 1957. Dray's position is discussed in some detail by Martin, *op. cit.,* pp.170–192.
26. I used the title 'Education for Rational Understanding' for a book (Melbourne: ACER, 1981) to mark the distinction from this other sense of 'understanding'.