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CHAPTER 6

HOW DO EFFECTIVE TEACHERS FOSTER HIGH-LEVEL COMPETENCIES?

Over the years we have made a number of studies of the ways in which the development of high-level competencies can be facilitated. Some of these were theoretically-based experiments with managers, employees, teachers and pupils^{6.1}. Others involved observations and interviews in homes^{6.2}, schools^{6.3} and workplaces^{6.4}. Our work has been particularly influenced by the research McClelland^{6.5} and Kohn^{6.6}. However, our conclusions are supported by the work of Klemp, Munger and Spencer^{6.7}, Huff^{6.8}, Gallimore^{6.9}, Flanagan^{6.10}, Collins^{6.11}, Gardner^{6.12} and Bachman^{6.13}, but most clearly by the work of Jackson^{6.14} and Winter, McClelland and Stewart^{6.15}.

Before summarising something of what we observed in schools, it is important to distinguish the activities which will be described from "Progressive Education".

Few advocates for Progressive Education - and particularly the more recent - have been clear about either the distinctive competencies which can be fostered through "progressive education" or the methods to be used to foster them. This is true despite a welter of interesting descriptions of project-based educational activities. Most of these read as if the object of the exercise was to have children discover a mass of low-level *everyday knowledge*^{6.16} - when the objective could have been to develop a variety of high-level *academic competencies* - like the ability to make good judgments, make one's own observations, find ways of recording data, or invent ways of communicating feelings or impressions - and unique new knowledge and combinations of specialist knowledge. (Indeed, most of the accounts of the most prestigious work in the area - that occurring at the Lincoln School^{6.17} - come across in precisely this way despite the fact that a close reading of the accounts shows that a few of those who organised some of the projects clearly did have other objectives in mind.) This failure to focus on alternative goals has been particularly true of what are perhaps the two largest groups of "Progressive Educators", namely: (1) the "romanticists" who have advocated that form of "child-centered education" in which the child is to be left free to identify and develop his or her own potential (but given little guidance or assistance in doing so), and (2) those who have been so appalled by either or both the personal and social consequences of the competitiveness bred in many schools and the criteria of "academic merit" used to allocate position and status that they have reacted against all explicit objectives and standards. These groups have laid themselves open to the accusation - which Bernstein^{6.18} rightly levelled at the "progressive" British Plowden Report - that they were urging teachers to pursue multiple but implicit (or intangible) goals.

What seems to be almost entirely missing is, on the one hand, a theoretically-based account of what we have been calling the motivational dispositions or competencies that are to be fostered through the activities described and, on the other, an account of the *developmental process* itself. For example, it is often emphasised that pupils are to choose the project they will undertake "democratically". However the competencies to be developed in the course of either that "democratic" decision-taking process or in the course of the project itself are rarely spelt out^{6.19}.

In the context of what we have so far seen in this book it is particularly important to note that "Progressive Education" has rarely been portrayed as having distinctive educational *goals*: still less has it been characterised as a highly demanding and structured set of activities which are designed to foster many more important competencies than the low-level-knowledge-oriented activities which dominate traditional classrooms. On the contrary, it has usually been presented as a different *method* of achieving the same goals and, perhaps, equalising achievement of those goals^{6.20}. Furthermore, none of the great men who have written on Progressive Education have followed through into the crucial business of assessment^{6.21} - yet no one - teacher or pupil - can pursue multiple, intangible, and unassessable goals very effectively.

I would like American readers to read what follows carefully. Unfortunately experience shows that the pre-eminence (or hegemony) of the technico-rational formulation of the goals of education leads the majority of American readers to assimilate what is going to be said to the concept of education as "inculcating knowledge" when what I am really saying is something very different. Unless readers understand that I will not in this chapter be discussing procedures which are designed to lead to the mastery of content, they will not hear what *is* being said. The teachers whose work I will focus on were not primarily concerned with conveying knowledge of subject matter to their pupils (although they did encourage them to master, and contribute to the development of, high-level specialist knowledge). They were concerned with fostering high-level motivational dispositions or competencies.

Just how unusual this approach is may be underlined by noting, first that there is no reference to such work in the 10-volume *International Encyclopaedia of Education*^{6.22} or in the last two editions of the *Handbook of Research on Teaching*^{6.23}. Second, by noting that Taylor^{6.24} is almost the only American psychologist or educationalist to use the word "learning" to refer to anything other than learning content. Yet there is no reason why it should not be used to refer to learning to do such things as persuade, muster arguments, judge, make good decisions, initiate hunch-based action and use one's feelings to monitor its effects, put others at ease, lead, invent, make one's own observations, develop better ways of thinking about things, or build up one's own understanding of how society works and the willingness and the ability to influence it. Our focus in this chapter is on how children learn to do precisely these things - that is, on how the development of competence to do such things can be fostered.

One Teacher's Approach

It is easiest to introduce this work by concentrating for a moment on the work of one teacher who had organised most of her teaching around interdisciplinary, project-based, enquiry-oriented, activity^{6.25}. This in itself was extremely unusual: even if project work existed in other classrooms it tended to be viewed as a kind of time-filler or reward, available to those who had "finished their work", at the end of the day.

The project work which this teacher's (8 to 11 year old) pupils undertook within their classroom was an integral part of original enquiries carried out in the environment around the school. These enquiries were organised around a topic, or theme. One such theme covered "The local area and its surroundings". Under this umbrella pupils carried out a number of projects, some individual and some group. One group "project" involved a re-examination of a local archaeological excavation. Another a study of population movements over time, a study of the history of each house and the occupations of its changing occupants, changes in patterns of agriculture, and a study of the current social structure of the area - who was related to whom and what they talked about. All projects involved original research. However some also involved the initiation of social action - such as getting something done about pollution in the local river. Such a project might be used both as a tool of social research and as a means of promoting the development of the understandings and competencies required to initiate effective social action. Within each project, pupils had personal projects, distinctive areas of specialization, and distinctive roles. Thus one pupil undertook a study of butterflies and their habitats whilst another studied the history of a hay-rake. The project-work which was carried out did not consist - as it so often does - of merely looking material up in reference books - although carrying out an original enquiry or initiating and monitoring some social action might involve tracing and using *specialist* books, research reports, or original accounts of scientific investigations or archaeological excavations. More commonly, if information was wanted, it was obtained by interviewing "ordinary" people or from church records, tombstones, old newspapers, or catalogues unearthed in attics.

But all of this, although extremely unusual, was not what was *most* distinctive about the work of this particular teacher. Most striking were her unusual concerns. Like Barnes^{6.26} and Curtis^{6.27}, she was not pre-occupied, as were most teachers, with course work; with covering a syllabus. But neither was she preoccupied with a particular process - such as creating a "democratic" classroom or encouraging an interest in architecture. Instead she focussed *on the high-level competencies which the pupils were to develop in the course of their work*. These competencies included reading, writing, spelling and counting. But they also included communicating, observing, finding the information which was needed to achieve goals (which often had to be collected by observation or by talking to people rather than reading books), inventing, persuading, and leading. In this context even the 3Rs took on a different complexion. Learning to read, for example, came to include such things as learning to use structure to locate

material which might just possibly contain interesting information, learning to use what was read to stimulate lateral thinking, and learning to quickly discard what was not relevant to one's purposes. Writing came to involve such things as the use of allusion and innuendo to influence the reader. Communicating came to include gesture, artwork, diagrams, and body language.

Project work of this kind - though not other kinds of project work - was fairly typical of the the relatively small proportion of teachers who successfully nurtured the kinds of competence we have been concerned with in this book. One key feature of the approach was that it enabled them to discover each pupils' distinctive interests and talents. These interests might lie in the types of behavior which made them enthusiastic (such as finding better ways of doing things, getting people to work together, or getting something done about a particular problem [such as pollution]) or they might lie in particular content (such as Celtic civilization or aerodynamics)^{6.28}. The approach also enabled different pupils to learn to undertake different activities. It confronted the pupils with the fact that there are endless *new* problems out there waiting to be understood and solved: there is no need for them to be put in the position of having to master tired out-of-date knowledge and the strategies to be used to reproduce solutions to problems which have already been solved. (Incidentally, one great advantage of tackling *new* problems is that the teacher cannot *tell* pupils how to act, but has to show them how to be adventurers, learners, detectives, and discoverers. Another is that unique combinations of up-to-date, high-level, specialist [rather than out of date and low-level] knowledge are required if progress is to be made.)

As a result of adopting this approach it was possible for the teachers to create *developmental environments* in which pupils practiced and developed a selection of high-level competencies (like leadership, initiative, the ability to observe and think, or the ability to understand and influence society) in the course of undertaking activities they cared about.

Since competence involves such things as the willingness to persist for a long period of time in the face of frustration - and often the scorn of others - it was important for the teachers to ensure that the pupils experienced the satisfactions which come from undertaking different sorts of task successfully. (Examples include conducting an experiment, putting a group at ease, persuading a local council to change its decisions, or communicating some important ideas to parents.)

In this context the teachers' task was to notice what motivated each pupil, invent an opportunity for the pupil to pursue his or her interests (so that the pupil would, in the process, develop some high-level competencies), monitor the pupil's response to that experience and take corrective action when necessary, and to support the pupils by helping them to tackle problems which would otherwise have discouraged them and led them to give up.

But they did not only create opportunities for their pupils to *practice* - and thereby develop - high-level competencies. They also, like good parents and good managers, coached their pupils by creating opportunities for their pupils to see the, normally private, psychological components of competence ... and the consequences. Thus they created opportunities for their pupils to share in their own thinking and prioritising. They shared their hopes and fears. They talked about their hunches, the auras which excited and beckoned them, the cues which told them when things were going to pay off and when they were going wrong - and thus when corrective action had to be taken. They shared their constant re-formulations of their goals and the problems which needed to be surmounted to reach them - re-formulations which occur as a result of (often play-like) rumination and reflection on the effects of hunch-based actions or "experimental interactions with the environment"^{6.29}. In all these ways they modelled components of competence in such a way that pupils could copy them ... and they let the pupils see that these processes were effective in helping them to reach their goals (and Bandura^{6.30} has shown that people are particularly likely to copy effective behaviors).

Some teachers shared their planning and anticipations, their concern with excellence, innovation and efficiency, their disdain for petty regulations, their anticipation of obstacles and their search for ways round them, their concern with aesthetics, and their feeling of being in control of their destinies. They demonstrated how to capitalise upon whatever resources were available - indeed how to select their purposes in the light of the resources that were available and achieve those purposes instead of, as was characteristic of many other teachers, complaining about the lack of resources to do what they wanted to do. In these ways these teachers communicated their values to their pupils and portrayed effective, competent, behavior in such a way that pupils could emulate it. It was not only the overt behavior which

was portrayed in this way for the pupils, but the entire pattern of thinking, feeling and striving which normally lies behind it. By deliberately avoiding the role of expert and provider of wisdom - by regularly (and successfully) trying to do things which they themselves did not initially know how to do - they showed their pupils how to be learners and innovators. By demonstrating in their own behavior how thoughts, feelings, and persistence lead to satisfactions that the pupils also wanted they strengthened the pupils' tendency to engage in the relevant behaviors. They portrayed the strategies of enquiry, anticipation of reactions, and experimentation which are required to build up an understanding of a complex bio-physical or social process, the strategies required to intervene in it, anticipate the way aspects of the system would react, and take corrective action when necessary. By accepting pupils' suggestions, they showed them that authorities and leaders are not best regarded as sources of information and organization, but as people who, at best, help other people to articulate and share what they know, acknowledge what others have contributed, and lead others to feel capable of achieving, and to be motivated to achieve their own goals.

Some of these teachers, like some parents, realised that, if pupils are to learn from mentors who portray the cognitive, affective, and conative components of high-level competence, mentor and disciple must share at least some of their enthusiasms, talents and concerns^{6.31}. Since there is no possibility that a single teacher's values could mesh with those of all his or her pupils, they realised that it was essential to place children with other adults outside the school who shared their values and to engage a range of other adults with them in the class's activities so that pupils could see people successfully exercising important components of competence whilst undertaking activities which they (the pupils) cared about. They also used stories, literature, and historical material to illuminate the intra-psychic, cognitive, affective, and conative, components of competence, and illustrate the personal and social consequences of pursuing different kinds of valued activity, and deploying different patterns of competence, in different types of society having different institutional arrangements and dominant cultural concerns. (One might add that they could, with advantage, also have prepared case history materials and materials derived from psychological research for this purpose).

In a similar way their pupils learned a great deal from, and came to rely more extensively on, their fellow-pupils. They developed a partnership in learning. Aided by a vocabulary supplied by their teachers, they became able to think about, and value, the contributions of others. The teachers would encourage them to identify the particular talents and contributions of their fellows and enlist their help in trying to find ways of tapping the energies of other - perhaps in some ways disruptive - pupils. In this way the teachers helped their pupils to develop and use multiple-talent concepts of competence and ability instead of classifying their fellows only as "smart" or "dumb". They made explicit both the fact that not everyone contributes in the same way to a group process, and also to the thought processes which contribute to effective leadership and management, i.e. to the processes which are involved in identifying, developing, and using the talents of each member of the work group. By engaging their pupils in this process the teachers therefore helped them to develop the competencies required for effective leadership and management.

Many of these observations have been confirmed by Jackson^{6.32}. But he also noticed something which, in retrospect, was also true of the effective teachers we studied but which we failed to comment upon. This was that teachers who had the effect of transforming pupils by releasing new competencies were unusually likely to read parable-like stories to their pupils.

High Schools and Higher Education

While these examples come from elementary schools, we have observed the same things in high schools^{6.33} and Winter, McClelland and Stewart^{6.34}, in an outstanding study of Ivy League and other colleges in the United States, have described the same processes at this level and documented their consequences for the future lives of those concerned and the communities in which they lived. The course content is not important. Neither is residential experience. What is important is participating in challenging activities which demand high-levels of initiative, self-reliance, leadership, and specialist knowledge and exposure to mentors who portray the thoughts, feelings, and behaviors which are characteristic of competent people. So is experience of the satisfactions which come from having undertaken a difficult and demanding activity. However, just as only a few elementary or high schools provide the kind of experiences we have described, so Winter *et al.* demonstrated that few universities do so either^{6.35}.

Toward an Understanding of Some of the Barriers

We will now go over some of the same ground again, but this time in a way which will help us to identify some of the barriers to the dissemination of such work.

As has been mentioned, one of the pupils in one of the schools we visited had become an expert on the distribution of different species of butterfly in the locality and their dependence at various stages in their life cycles on features of local habitats. Another had become an expert on the history of a hay-rake: how it had changed over time and how those changes were related to developments in steel making on the one hand and patterns of land use on the other. A third had become an expert on the social structure of the area around the school: who knew whom, and what they talked about.

It would be hard to give students credit for such unique specialist knowledge using traditional tests; separate tests would be required to identify each child's knowledge.

But this is the least of the problems which this work poses for assessment. More important than the unique store of specialist knowledge built up by the first pupil mentioned above was the fact that he had developed a selection of the *competencies* which are required to be a scientist. Among other things, he had learned to be sensitive to the cues which told him that he had an unresolved problem. He had developed the tendency to try to make glimmers of insight on the fringe of consciousness explicit. He would wake up at night in an effort to do so. He had strengthened his tendency to do these things - and his confidence that he could do them - as a result of experiencing the satisfactions which come from noticing, and beginning to understand, things which no one had noticed or understood before. He had contacted university lecturers who were interested in the same problem and spoken to them as equals. He had sharpened up his ideas by sparring with them. He had learned not only that he had a right to ask questions and that his questions were as good as those posed by others, but also that he had a right to expect others to help him answer them. He had learned to tolerate the frustrations which are involved in trying to find better ways of thinking about things. He had learned to find ways of summarising his insights - not only in words, but also in diagrams and mathematical formulae^{6,36}.

The second pupil had developed the self-motivated competencies, pre-occupations, sensitivities, thoughtways, and perceptions required to be a historian. And the third had developed the competencies required to be a sociologist. And so on for the other pupils. Each had developed some of the competencies required to perform effectively in one or another of the wide range of jobs and roles (including wife, husband, mother, or cook) required in modern society.

Existing assessment procedures are even less able to document the growth of the subtle skills, motivated habits, thoughtways and pre-occupations which contribute to this repertoire of competencies required by the scientist, historian, sociologist, photographer, cook, or mother than they are to cope with the problem of idiosyncratic knowledge.

Even this does not exhaust the problems which the educational process we have described pose for evaluation and certification. Because the pupils had worked as a group, one pupil had become good at co-ordinating the activities of others, another at putting others at ease and smoothing over difficulties, another at presenting the results of other people's work to external visitors - a communicator rather than a scientist. In the course of doing these things all pupils learned to communicate, to invent, to make their own observations, to work with others, and to lead and to follow. These competencies defy conventional measurement.

As we shall see in the next chapter, this measurement problem is of particular importance partly because teachers teach and pupils work toward the goals that are *assessed*, partly because, in order to improve their performance, teachers and pupils need means of monitoring progress toward these goals, and partly because teachers need some tools to help them to administer multiple, individualized, competency-oriented, educational programs. Yet assessing these qualities poses a host of dilemmas.

Concluding Comment

It is important to conclude this chapter by first re-emphasising that the competency-oriented educational process which has been briefly described is quite different both from the content-oriented educational programs which dominate American, English, and Scottish schools and from the activities

which have been pursued under the rubric of "Progressive Education" in America^{6.37}. *The objective of the teachers whose work has been summarized was to nurture high-level competencies like the ability to lead, invent, make one's own observations, and find ways of summarising them.* In contrast to this, most "Progressive Education" has remained heavily *content*-oriented. Indeed, the hegemony of the notion that education is *the same thing* as acquisition of knowledge of content prevents many readers even hearing what has been said in this chapter. What is involved can best be highlighted by saying that the change in orientation that is needed involves a shift from teaching as telling to teaching as facilitating growth and a shift from content-oriented to competency-oriented education. If we are to promote movement in these directions it will be necessary to place much more emphasis on differentiation and variety in the educational system, but doing so creates problems to which we will turn in the next chapter.

Notes

- 6.1. See Raven (1977, 1984) for summaries.
- 6.2. Raven (1980)
- 6.3. Raven *et al.* (1985); Raven (1987)
- 6.4. Raven (1984); Raven and Dolphin (1978)
- 6.5. McClelland (1961, 1964, 1965, 1982, 1982); McClelland *et al.* (1969); Winter and McClelland (1963, 1981)
- 6.6. Kohn (1969, 1977); see also Burns *et al.* (1984).
- 6.7. Klemp *et al.* (1977)
- 6.8. Huff *et al.* (1982)
- 6.9. Gallimore (1985)
- 6.10. Flanagan (1978) found that most 30 year olds could identify at least one teacher who had led them to clarify their values and released latent competencies.
- 6.11. Collins (1979) found that high-level competencies had been developed on the job.
- 6.12. See, for example, Gardner (1983, 1987, 1990).
- 6.13. Bachman *et al.* (1971, 1978)
- 6.14. Jackson (1986)
- 6.15. Winter *et al.* (1981)
- 6.16. Note the way in which this supports Schon's (1987) observations on the hegemony of the technico-rational model of competence.
- 6.17. See e.g. Aikin (1942).
- 6.18. Bernstein (1975). There is, of course, a deeper version of Bernstein's argument. This is that the objective was to create a mechanism which would select and advance those who were both able to work out what one needed to do to obtain the preferment of one's superiors and who were willing to do whatever was necessary. This ability, crucially important to both advancement in, and the operation of, modern society, includes the ability to justify one's behaviour by mouthing the right words (in this case about useful education) whilst actually engaging in the activity for other reasons. We may note in passing that in learning to do these things pupils would be learning to labour in a much more important way than the pupils described by Willis (1977).
- 6.19. Cremin (1961), Fraley (1981), and Ravitch (1974) have provided useful summaries of the Progressive Education movement. Dewey (1899, 1910, 1916) seems to have been preoccupied with fostering the skills of the research scientist (the ability to conceptualise, analyse and experiment) on the one hand and with creating democratic classrooms on the other. His writing does not encourage teachers to make use of multiple-talent concepts of ability (for example by encouraging them to think about a wide range of alternative talents which schools might foster), still less encourage them to foster different competencies in different children. Most of Kilpatrick's writing (e.g. *Foundations of Method*, 1926) is obscure in the extreme, but in his 1918 text on *The Project Method* he indicates that, in translating a plan into a reality, pupils should practise proposing, planning, executing and judging. These are high-level competencies, but Kilpatrick does not analyse them or present them in a way which would encourage teachers to reflect on what it means to, e.g., plan and execute, or on the counselling which is necessary if pupils are to practice (and thereby develop) these competencies in the course of undertaking activities they care about. Counts (1932) and Rugg (in a range of texts for pupils) seem to have set out to introduce *particular* understandings of socio-politico-economic processes. The majority of "Progressive Educators" have been even less specific about the knowledge they have been trying to inculcate or the qualities which should be fostered in pupils. Indeed most have been explicitly opposed to any

attempt to specify objectives. However this majority is made up of two very different groups of people. One group may be termed the "romanticists". They believe that children should be left on their own to thereby learn "instinctively" what is important to them. A larger group is clearer about what it is opposed to than what it is for. These teachers have been so appalled by either or both (i) the effects on most children, and thence on society, of the competitive and self-advancement-centered climate which permeates most classrooms and (ii) the selection of a small number of pupils who possess a very limited range of not particularly valuable "academic" competencies (which do not in fact deserve to be so described) for advancement into the most prestigious and influential positions in society that they have been more concerned with destroying the competitive climate and the limited "standards" than with putting something else in their place. (It is this group which is responsible for the cult of mediocrity which is widely associated with Progressive Education). What is important from the point of view of this footnote is, however, that, for one or other of these reasons, the majority of Progressive Educators believe that any attempt to state objectives would re-introduce competitiveness. Most attempts to *implement* "Progressive Education" seem to have been an appalling mess: Barth (1972), Aikin (1942), Rathbone (1971), Rugg (1926), Rugg and Schumaker (1928), Wright (1950, 1958). The "bible" of the Progressive Education Movement (the 1926 Handbook of the NSSE) nowhere identifies the competencies which are to be fostered, how they are to be fostered, or how they are to be assessed for either formative or summative purposes. French *et al.* (1957), Stratemeyer *et al.* (1947), Caswell and Campbell (1935), Tyler (1936), and the Educational Policies Commission (1938) do attempt to identify goals, but have muddled together goals at a wide variety of levels, the frameworks are not multiple-talent frameworks, and the goals are only weakly linked to curriculum processes. Most accounts of classroom processes focus on encouraging students to take "democratic" decisions within the compulsory attendance framework of schools (a framework which deprives pupils of citizenship rights and most of the sources of power and influence [e.g. the option to withdraw and the opportunity to influence decisions and gain treatment suited to their own priorities through the marketplace] which are open to people in capitalist "democracies") and in which teachers could not allow students to implement many decisions which would command majority support from pupils, on "discovering" low-level everyday facts about the local area which have nothing to do with each other, little bearing on any area of organised endeavour, which the pupils are unlikely to need in the future, which the teacher already knows, and which are mostly "discovered" from books, sometimes from highly directed field trips, and sometimes from "discussions" which involve guessing what the teacher has in mind. The recurrent eulogising references to democracy in this context are not only somewhat nauseating in themselves, they conjure up images of the many crimes against mankind which have been committed in the name of protecting and advancing "democracy" and in this way may have alienated many potential adherents to competency-oriented education. Among the few partial exceptions to the rather damning picture are the writings of Barnes and her colleagues at the Lincoln school (Barnes and Young, 1932; Tippett *et al.*, 1927), although, even here, Bestor (1953), an ex-pupil of the school, has taken the school to task for offering courses which focussed on teaching non-generalisable everyday knowledge instead of encouraging pupils to make contact with academic disciplines (or, we might add, developing high-level competencies). Modern students of education are, however, unlikely even to come into contact with the more widely-oriented writing in the area since it is not referenced in, still less embedded in, more recent writings on Progressive Education (eg Barth [1972] Ravitch [1974, 1983] or the 1985 *International Encyclopaedia of Education* (Husen and Postlethwaite, 1985).

6.20. None of the teachers Bennett (1976) asked to define "Progressive Education" did so in terms of distinctive goals and, as is well known, Bennett subsequently concluded from his classroom observations that most "open" classrooms were a mess. The failure to articulate non-knowledge-of-content goals is well illustrated in Curtis's *Boats Project* (Tippett *et al.* 1927; Cremin, 1961). This would appear to have remained heavily content- and skill- oriented, with a hint of *introducing* pupils to new interests. It contains little suggestion of using interests to foster competencies. Dewey seems to have been content to evaluate projects designed to encourage experimentation in terms of their contribution to knowledge rather than in terms of the competencies developed in the process. Likewise, he seems to have been content if "democratic" processes were enacted in classrooms. He does not seem to have set down the competencies and understandings required for democratic functioning.

6.21. Raven *et al.* (1985)

6.22. *The Eight Year Study* (Aikin, 1942) made a pioneering attempt to tackle some of the assessment issues. However its work was not followed through and the crucial importance of assessment from the point of view of: (a) enabling teachers to achieve their goals, (b) enabling students to identify

the benefits, and (c) harnessing the sociological forces which determine what happens in schools through the certification process was not recognised.

6.23. *International Encyclopaedia of Education* (Husen and Postlethwaite, 1985)

6.24. Travers (1973); Wittrock (1986)

6.25. Taylor (1971, 1976)

6.26. (a) Although this example comes from elementary schools, a great deal of material on how High School teachers can foster high-level competencies by changing the way they teach their subjects, through interdisciplinary and project based studies, and through special courses is available in Raven (1977). (b) Mathematics was not fully integrated into this scheme. However the problems which this teacher had in trying to integrate mathematics into her interdisciplinary teaching actually highlight neither deficiencies in the philosophy of interdisciplinary education, nor deficiencies in this teacher's competence, but the need to radically re-think mathematics education.

6.27. Barnes and Young (1932)

6.28. Gardner (1990) and Walters and Gardner (1986) likewise assert that "finding some topic or skill with which one feels 'connected' is the single most important event in a student's life". Flanagan (1978) makes a similar observation from his data from the *Project Talent* follow-up about the lifetime effects of schooling.

6.28. Curtis, see Cremin (1961)

6.29. See also Jackson (1986)

6.30. Bandura (1977)

6.31. Gardner (1990) has suggested that working with only one person who shares their concerns and models appropriate behavior may enable the pupil to sustain the behavior even when he or she is confronted with the mindless activities which occupy so much time at school and in the wider society. This is an important suggestion which is supported by Flanagan's (1978) observation that most adults are able to cite at least one person who changed their lives in this way in their youth. Unfortunately, Gardner does not seem to recognise the full range of competencies the development of which can be facilitated in this way or the importance of the shared valuation of particular behavior.

6.32. Jackson (1986)

6.33. Raven (1977). This book documents ways in which High School teachers can foster high-level competencies by teaching their subjects in particular ways, through project work, through interdisciplinary studies, and by running theoretically-based programs.

6.34. Winter *et al.* (1981)

6.35. On reading this statement in an earlier draft of the book Stanley Nisbet wrote to say that a survey he once conducted in Glasgow University came to the same conclusion.

6.36. Gardner (1990) and Duckworth (1987) have also stressed the importance of children developing their own mathematical notations.

6.37. Parker (1894); Dewey (1902); Kilpatrick (1918); Bourne (1916); Rugg and Schumaker (1928); Mississippi State Department (1936); Aikin (1942); Cremin (1961); Newton Public Schools (1972); Barth (1972); Fraley (1981). Once again, Stanley Nisbet has drawn my attention to a process which may have contributed to this oversight. The claim to be child-centered in itself says nothing about whether a teacher focuses on conveying content or nurturing high-level competencies in his her or her interaction with the individual child. Since much discussion of the issues surrounding Progressive Education have been couched in these terms this may have enabled more teachers to have engaged in competency-oriented education than is immediately obvious. This process of concealment may have been exacerbated by another. Even a teacher who focuses on competence, will, *in his or her interactions with the pupils*, focus mainly on content - on butterflies and their habitats, on what people were talking about and so on. It is only when they engage in a "higher level" discussion - such as about the students' motives and talents and how they can be harnessed to contribute to a group project or when they discuss the educational process itself - that they will publicly focus on the competencies to be nurtured. Unfortunately, neither our own observations nor the data available support these hypotheses.